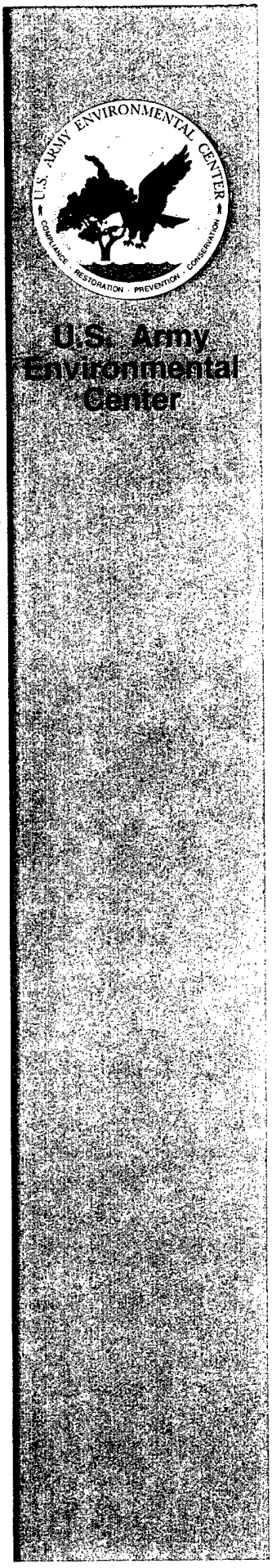

CONTRACT NO. DAAA15-90-D-0017
Delivery Order 0002

Document No. SFIM-AEC-ER-CR-99023

FINAL
SITE INVESTIGATION REPORT FOR THE COAL STORAGE AREA ANNEX STUDY AREA, SURPLUS OPERABLE UNIT, FORT SHERIDAN, ILLINOIS

August 10, 1999

Prepared for:

U.S. ARMY ENVIRONMENTAL CENTER
Base Closure Division
Aberdeen Proving Ground, Maryland 21010-5401

Prepared by:
QST ENVIRONMENTAL INC.
11665 Lilburn Park Road
St. Louis, Missouri 63146-3535

AEC Form 45, 1 Feb 93 replaces THAMA Form 45 which is obsolete.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
		Site Investigation Report, June-August 1999

4. TITLE AND SUBTITLE

Final Site Investigation Report for the Coal Storage Area Annex Study Area, Surplus Operable Unit, Fort Sheridan, Illinois

5. FUNDING NUMBERS

DAAA15-90-D-0017
Delivery Order 0002

6. AUTHOR(S)

Deborah McKinley, Scott George, Ken Stringer

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Environmental Science & Engineering, Inc.
11665 Lilburn Park Road
St. Louis, Missouri 63146

8. PERFORMING ORGANIZATION REPORT NUMBER

490-2087-0600

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Army Environmental Center
Base Closure Division
Attn: SFIM-AEC-BCA
Edgewood Area Building E-4480
Aberdeen Proving Ground, Maryland 21010-5401

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

SFIM-AEC-ER-CR-99023

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Distribution unlimited. Approved for public release.

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This site investigation report presents the results of the sampling and analysis conducted at the Coal Storage Area Annex. The data are evaluated through a risk-based screening process to determine the potential risks associated with the study area, which is to be surplused. Based on a carcinogenic risk level of 1E-04, the widespread use of coal at the study area, and the consistently elevated levels of PAHs detected in the soil samples, a removal action was recommended for the Coal Storage Area Annex Study Area.

14. SUBJECT TERMS

Coal Storage Area Annex, Surplus OU, Site Investigation, Risk Analysis, Fort Sheridan

15. NUMBER OF PAGES

80

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

Final Site Investigation Report for the Coal Storage Area Annex Study Area, Surplus Operable Unit, Fort Sheridan, Illinois

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ESE Project No. 490-2087-0900

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List of Acronyms and Abbreviations

ANL	Argonne National Laboratory
B43	Building 43
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BRAC	Base Realignment and Closure
CSA	Coal Storage Area
DER	Data Evaluation Report
DI	deionized water
DoD	Department of Defense
ft-bgs	feet below ground surface
HASP	Health and Safety Plan
IEPA	Illinois Environmental Protection Agency
mg/kg	milligrams per kilogram
OQAPP	Overall Quality Assurance Project Plan
OU	Operable Unit
PAH	polynuclear aromatic hydrocarbons
POL	petroleum, oils, and lubricants
PRG	Preliminary Remediation Goals
QC	quality control
RI/FS	Remedial Investigation/Feasibility Study
SI	Site Investigation
TEP	Technical Evaluation Plan
USEPA	U.S. Environmental Protection Agency

1.0 Introduction

This section of the Site Investigation Report for the Coal Storage Area Annex Study Area (CSA Annex SI) includes a brief description and history of Fort Sheridan and the Surplus Operable Unit (OU) and a discussion of the objectives, scope, and approach for the CSA Annex study area. This CSA Annex SI addresses only the aforementioned CSA Annex study area.

The Sampling and Analysis Plan for this study area referred to it as the CSA2 Annex study area (QST, 1999). However, it appears this study area is separate from CSA2 and lies in between CSA2 and CSA3. Therefore, this study area is more appropriately referred to in this document as the CSA Annex study area.

1.1 Site History

Fort Sheridan is located approximately 25 miles north of Chicago along the western shore of Lake Michigan. The installation location is shown in Figure 1-1. Fort Sheridan, named for General Phil Sheridan, was established in 1887 in the wake of the Great Chicago fire of 1871 and at the request of Chicago city leaders following labor riots of 1886. The installation is bounded by the towns of Highwood to the west, Highland Park to the south, and Lake Forest to the north. Fort Sheridan covers an area of approximately 712 acres. The land occupied by Fort Sheridan is approximately 50 feet above Lake Michigan. The topography is relatively flat and gently sloping toward Lake Michigan. The lake side of the installation terminates in a bluff or embankment that extends the full length of the boundary and beyond.

The Fort Sheridan area has been developed since the mid-1800s and was the site of heavy industry including logging, a lumber mill, leather tanning, brick making, and iron casting (Melichar, 1995). Land was transferred to the government for a token fee of $10 by three members of the Commercial Club of Chicago: Adolphus Bartlett, Charles Hutchinson, and John Janes. Three ravines at Fort Sheridan are named for these individuals.

Troops trained at Fort Sheridan served in the Spanish-American War in 1898, the Mexican Intervention in 1913, and World Wars I and II. Fort Sheridan was a training center for anti-aircraft artillery units during World War II. From the 1950s until 1974, Fort Sheridan served as maintenance and supply center to NIKE air-defense missile systems for the Chicago, Gary, Detroit, Minneapolis-St. Paul, and Milwaukee air-defense network. Three NIKE missile silos were installed in the northern part of Fort Sheridan. These silos have been largely stripped of equipment and abandoned.

In 1988, the Commission on Base Realignment and Closure (BRAC) recommended Fort Sheridan, Illinois for closure to the Secretary of Defense. The installation ceased military operations as an Army facility in May 1993. Subsequently, portions of the installation were realigned to the U.S. Navy and U.S. Army Reserve. Approximately 100 acres are now owned by the U.S. Army Reserve and used for equipment storage and disbursement, training, and administrative functions. Approximately 200 acres are now owned by the Navy and are used for family housing, administration, vehicle maintenance, communications and training. Approximately 300 acres have been transferred to private ownership, about 40 acres are awaiting property transfer, and the remainder of the installation (approximately 60 acres) is still under Army jurisdiction and will be transferred to private ownership upon completion of environmental investigation and/or restoration activities.

To support decisions regarding preparation of the property for release, the Department of the Army has implemented environmental studies and will conduct restoration activities (if needed) before property transfer. The Army conducts these activities under the Defense Environmental Restoration Program and the BRAC program.

Fort Sheridan was divided into two principal OUs in 1995 to facilitate the implementation of the remedial investigation/feasibility study (RI/FS) and expedite the reuse of surplus Army property under the BRAC program. The first OU, designated the Surplus OU, consists of the excess installation property planned for disposal and reuse. This area occupies the north end of Fort Sheridan and is primarily composed of the golf course and historic district. The second OU is designated the Department of Defense (DoD) OU since this area has been realigned to the U.S. Navy and U.S. Army Reserves. It includes most of the area to the south of Bartlett Ravine and the Army Reserve area in the northwest corner of Fort Sheridan. The boundaries of the two OUs are indicated in Figure 1-2.

A RI/FS is currently being conducted for the Surplus OU at Fort Sheridan. The Surplus OU consists of property that has been declared excess by the Army and will be or has been transferred to the local communities. The CSA Annex study area is located within the Surplus OU (Figure 1-3). The CSA Annex study area is bounded on the east by the U.S. Navy property line, the west by Thorpe Road, and the south by CSA2 (Figure 1-4). This new study area was created to characterize the area in the vicinity of soil Boring B43SB04 that extends south from the southern edge of the CSA3 removal action to CSA2. The area occupied by the CSA Annex is currently leased to the Cities of Highland Park and Highwood. This area will be transferred to the two cities upon completion of the environmental restoration activities. This property is expected to be assigned to residential use.

1.2 Investigative History

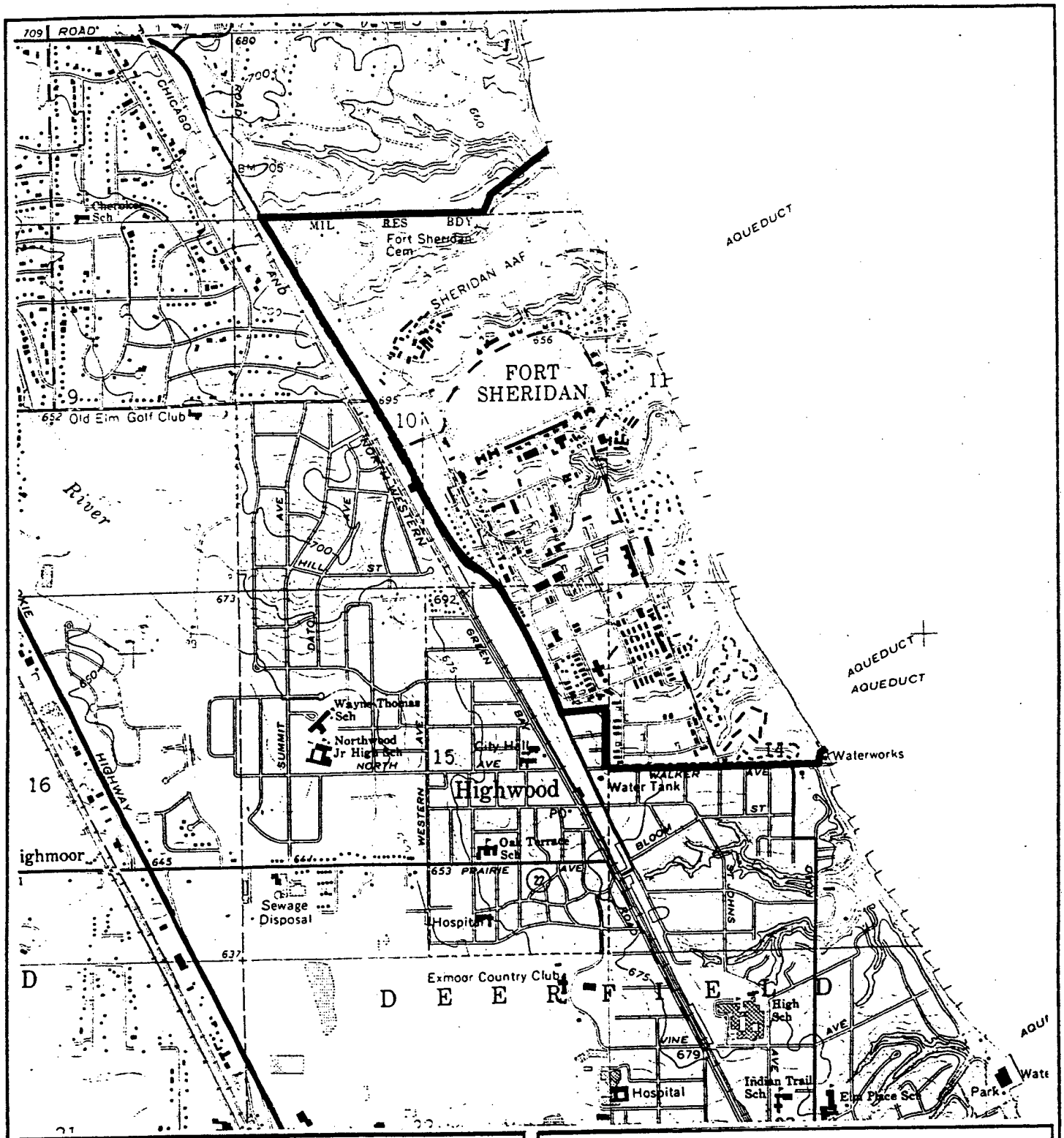
Preliminary assessments of Fort Sheridan, conducted in 1982 and 1989, identified several areas on the installation affected by previous landfilling activities; storage and handling of petroleum, oils, and lubricants (POL), as well as other motor pool wastes; former CSAs; and storage and handling of various chemicals [Gross *et al.*, 1982; Argonne National Laboratory (ANL), 1989]. The nature and duration of these activities at Fort Sheridan justified conducting investigation activities to verify and quantify the nature and extent of associated chemical constituents in the environment, perform human health and environmental risk assessments, and, if necessary, evaluate remedial action alternatives leading to individual study area response actions.

During the Phase II RI investigation, soil Boring B43SB04 was completed and sampled. Soil Boring B43SB04 was initially associated with the Building 43 (B43) study area, even though it is located across former Thorpe Road from B43 (see Figure 1-4). This soil boring was completed to assist in the evaluation of a potential solvent release from B43. However, evaluation of the data obtained from B43SB04 and other soil borings collected in the vicinity of B43 indicated that the release was limited to a small area near the entrance to B43 and that B43SB04 was, in fact, located in an area physically and chemically separate from the B43 study area. Elevated levels of polynuclear aromatic hydrocarbons (PAHs) were detected in the surface sample collected from B43SB04. Therefore, additional soil sampling was conducted on April 21, 1999 to delineate the degree and extent of the PAHs within the CSA Annex study area. During this investigation, seven test pits were excavated and sampled within the CSA2 Annex study area.

1.3 CSA Annex SI Objectives

The objectives of the investigations at the CSA Annex study area were to:

1. Characterize the nature and extent of mission-related constituents in the CSA Annex soils;
2. Identify and characterize potential risks posed to human and environmental receptors by means of a conservative risk-based screening process; and
3. Determine, on the basis of the risk-based screening process, whether further evaluation or action is necessary to protect human health and the environment.



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ILLINOIS

QUADRANGLE LOCATION

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Project #490-2087
Adapted From USGS Topographic Quadrangle:
Highland Park, Illinois, 1980.

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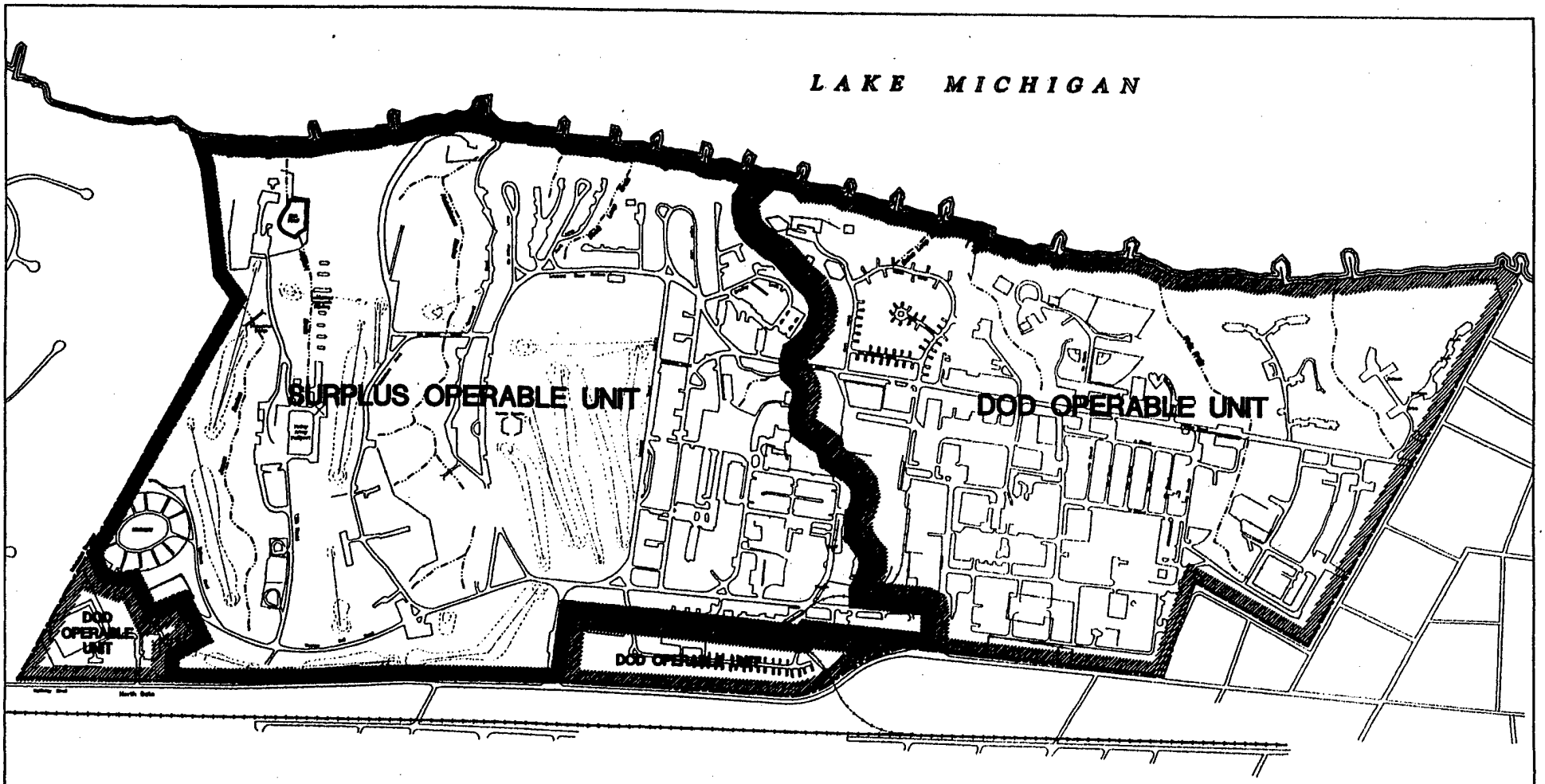
feet

Figure 1-1
Site Location

Final CSA Annex SI Report
Surplus Operable Unit
Fort Sheridan, Illinois



Adapted from Official Post Map, Directorate of Engineering and Housing, Fort Sheridan, Illinois, January 6, 1989

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Figure 1-2
Fort Sheridan Operable Units

Final CSA Annex SI Report
Surplus Operable Unit
Fort Sheridan, Illinois

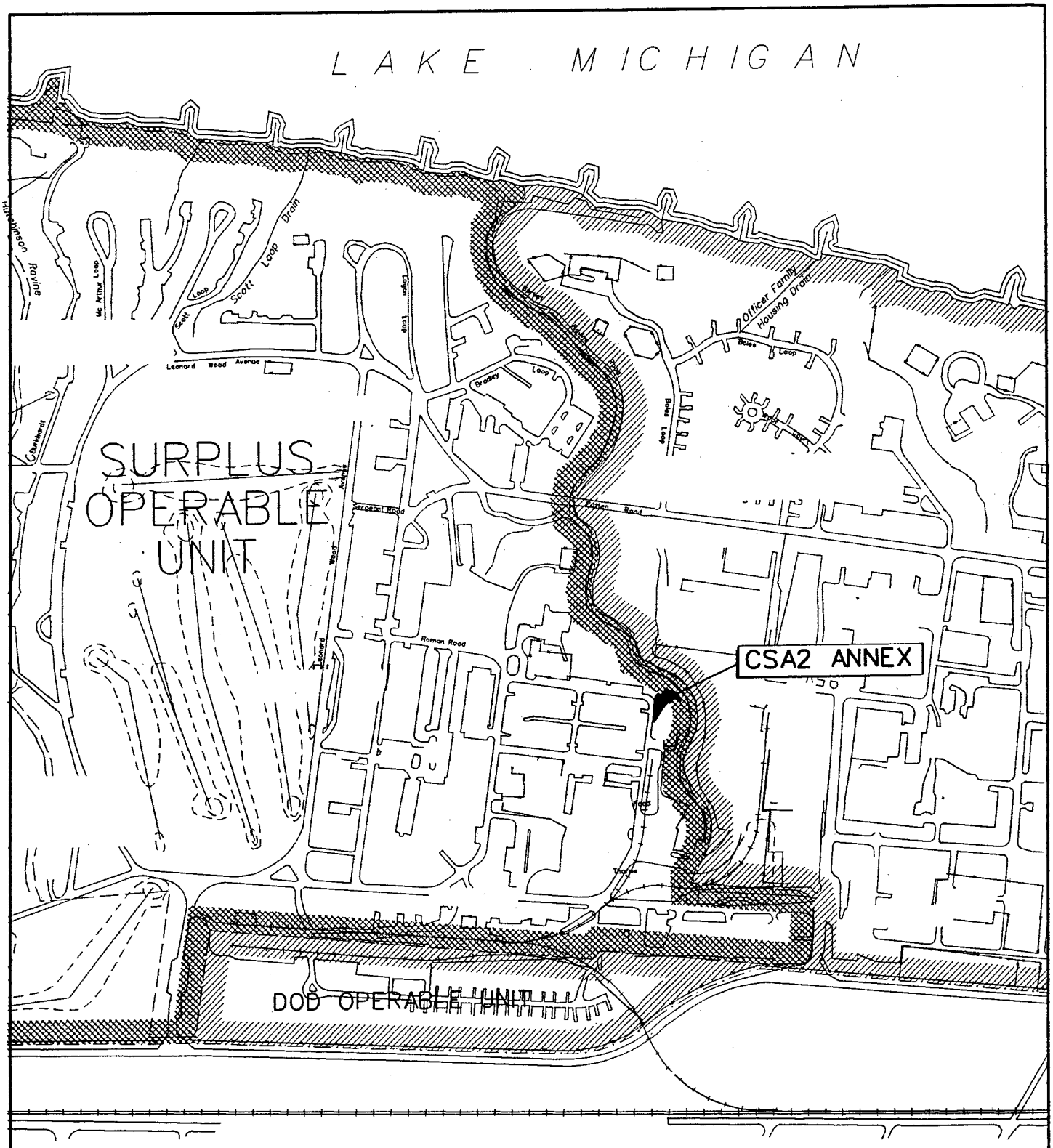

Figure 1–3
Study Area Location

Final CSA Annex SI Report
Surplus Operable Unit
Fort Sheridan, Illinois

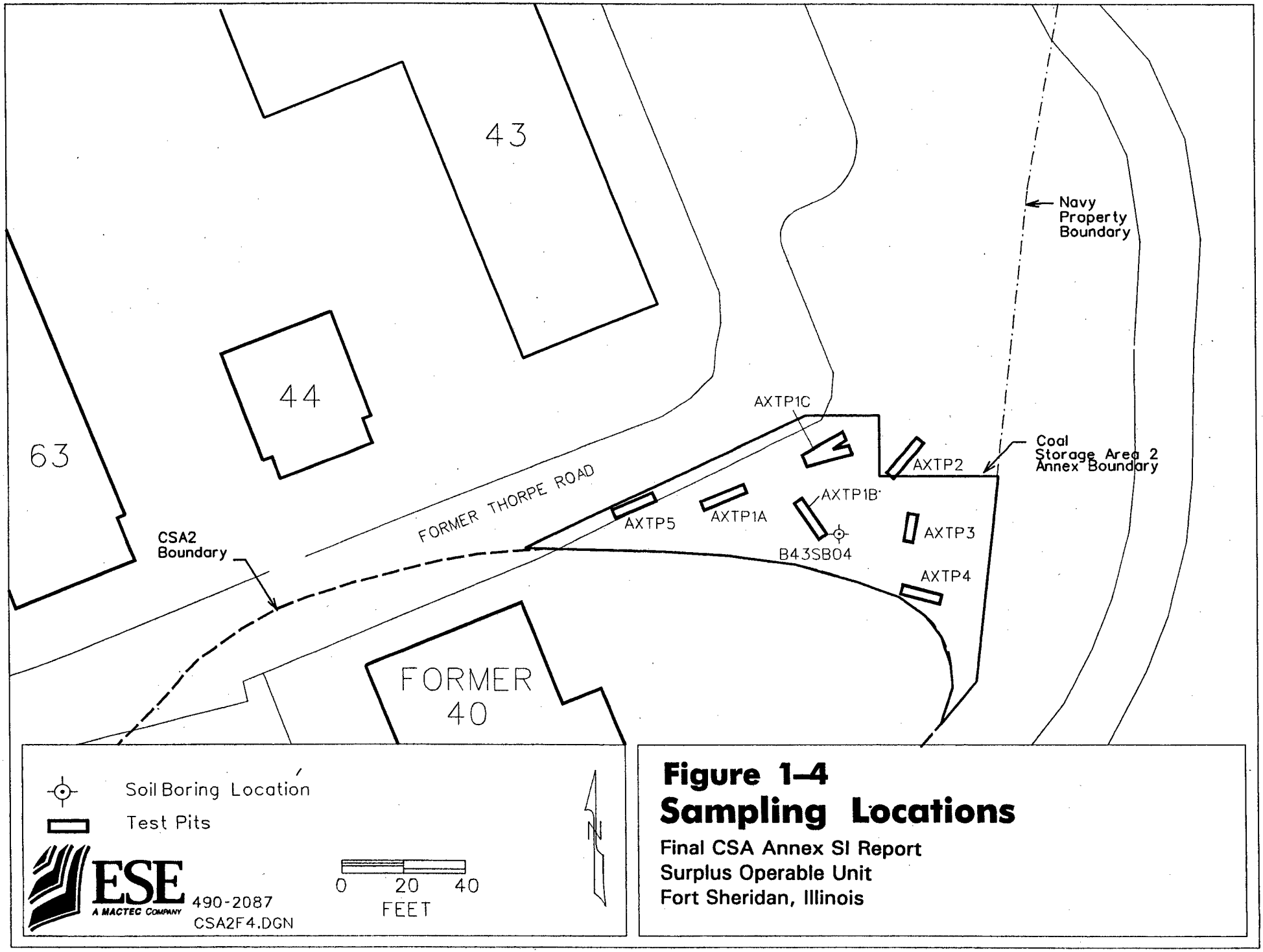

Figure 1-4
Sampling Locations
Final CSA Annex SI Report
Surplus Operable Unit
Fort Sheridan, Illinois

2.0 Study Area Investigations and Results

The investigation activities presented in this CSA Annex SI were conducted in consultation with representatives from the U.S. Environmental Protection Agency (USEPA) and Illinois EPA (IEPA). These two agency representatives, together with the Fort Sheridan BRAC Environmental Coordinator (BEC), comprise the BRAC Cleanup Team (BCT).

2.1 Test Pit Excavation and Sampling

Seven test pits were excavated in the CSA Annex study area on April 21, 1999 with a backhoe. The location, length, and orientation of the test pits are shown in Figure 1-4. The test pits were excavated in accordance with the protocols and procedures in Section 4.4.1 of the Overall Quality Assurance Project Plan (OQAPP) (ESE, 1995) and the Health and Safety Plan (HASP). Test pits were excavated to a depth of 3 feet below ground surface (ft-bgs) unless a coal layer was encountered. In those instances where a coal layer was encountered, the test pit was excavated to at least 1 foot below the coal layer or 3 ft-bgs, whichever was deeper. Completed test pits were backfilled and packed.

Five samples were collected from each test pit: one scrape sample from each of the four sidewalls and one grab sample from the floor of the test pit. The sidewall sample scrapes typically started below a surface layer of gravel and extended to the bottom of the excavation. The first step in collecting the scrape samples was to clean off the sample scrape area with a stainless-steel spoon to remove material that had been smeared against the sidewall by the backhoe during the excavation. Each sidewall sample was collected by scraping off sidewall material with a spoon into a stainless-steel bowl. The material was then mixed in the bowl before placement in the glass sample jars. Floor samples were collected from the top 6 inches of material in the center of the test pit floor using a sample spoon. The collected material was placed into a stainless-steel bowl and mixed. The mixture was then placed in the sample jar.

Sample spoons and bowls were decontaminated by washing in a deionized water (DI)/Liquinox™ solution followed by a DI water rinse after each use. The backhoe bucket and arm were steam-cleaned over the test pit just excavated, thus collecting the wash water in the test pit. After collection and packaging, the samples were shipped on ice via Federal Express Overnight to the Quanterra Environmental Services Laboratory in St. Louis, Missouri. The samples were analyzed for PAHs by USEPA Method 8310.

Previous investigations conducted at the CSA2 and CSA3 study areas have determined that concentrations of inorganic constituents at these study areas are at background concentrations and the

PAHs are the only constituents of concern at these study areas (QST, 1997a and 1997b). Therefore, it is reasonable to assume that, given mission-related activities conducted at the CSA Annex study area were the same as those conducted at CSA2 and CSA3, inorganic constituents would be at background concentrations at the CSA Annex study area. Therefore, samples were only analyzed for PAHs.

2.2 Field Observations

The nature of the geology encountered in each test pit was recorded in the field logbook by the geologist at the time of excavation. Test pit logs are presented in Appendix A. Field observations are summarized in the following paragraphs.

Test Pits AXTP1A, AXTP1B, and AXTP1C

Test pits AXTP1A, AXTP1B, and AXTP1C encountered concrete slabs at approximately 0.5- to 1-foot below existing grade. These concrete slabs may be contiguous with the concrete observed in test pit AXTP05, discussed below (see Figure 1-4). A brick-lined manhole was encountered on the northern edge of AXTP1C. The fill over the concrete slabs at test pit AXTP1A consisted of a mixture of soil, gravel, and coal fill. The fill over the concrete at test pit AXTP1C consisted predominantly of coal fill.

Test pit AXTP1B was completed adjacent to B435B04 (see Figure 1-4). This test pit was approximately 14 feet long and a maximum of 6 feet deep (see Appendix A). The western wall of test pit AXTP1B consisted of approximately 8 inches of gravel, followed by about 1.25 feet of coal/cinder fill, which was underlain by 4.33 feet of brown native clay (till). The eastern wall had a different composition consisting of approximately 8 inches of gravel, underlain by approximately 3.5 feet of coal/cinder fill mixed with clay fill, which in turn was underlain by 2 feet of native clay. The northern wall of the test pit consisted of approximately 3.5 feet of gravel/rock fill underlain by native clay. The southern wall consisted of approximately 10 inches of gravel underlain by 2.3 feet of clay/gravel fill, followed by native soil. The scrape started below the surface gravel (8 to 10 inches) and extended to the bottom of the excavation. The sample scrape on the northern wall started at 3.5 feet below grade.

Test pit AXTP2 was located north of B43SB04 and encountered clean backfill that was placed after the CSA3 removal action effort. This effort is discussed in detail in the Draft Non-Time Critical Removal Action Completion Report, Buildings 42, 43, 77, and Coal Storage Area 3 (IT, 1999). A test pit log was not generated for this test pit.

Test pit AXTP3 was completed east of B43SB04 and was approximately 9 feet long and 3 feet deep. The lithology encountered was similar for each of the test pit walls. A surface layer of approximately 8 to 12 inches of gravel/clay fill was underlain by 6 inches of coal/cinder fill. This in turn was

underlain by approximately 2 to 2.5 feet of native clay. The south lithology was slightly different with approximately 10 inches of clay fill (little or no gravel), which was underlain by approximately 1 foot of coal fill before encountering native clay.

Test pit AXTP4 was completed southeast of B43SB04 and was approximately 13 feet long and 4 feet deep. Similar lithology was encountered at each of the test pit walls. The lithology consisted of approximately 8 to 10 inches of gray-brown clay soil followed by approximately 1.5 feet of coal/cinder fill, which, in turn, was followed by native clay. Only 1 inch of clay soil was present at the top of the west wall.

Test pit AXTP05 encountered a concrete slab at approximately 8 to 10 inches below grade. As stated above, the concrete encountered in test pit AXTP05 may be contiguous with the concrete observed in test pits AXTP01A and AXTP01C. The lithology in test pit AXTP05 was logged in samples collected from two walls to determine the nature of the fill over the concrete. Due to the excavation procedure and fill encountered, only the north and east walls allowed logging and sampling. The north wall contained approximately 3 inches of surface gravel, followed by 3 inches of coal fill and then approximately 10 inches of clay/rock fill. The east wall consisted of approximately 3 inches of gravel fill, followed by 2 inches of coal fill, then 3 inches of clay/rock fill.

2.3 Laboratory Analytical Results

A summary of the analytical results for the Phase II RI soil boring B43SB04 as well as results from the test pit sampling are presented in this section. The analytical data sheets are presented in Appendix B.

2.3.1 Data Validation

Analytical data were validated in accordance with the National Functional Guidelines (USEPA, 1994). The results of the data validation are contained in Appendix C. As a result of the validation, the concentrations reported for Samples AXTP1BS and AXTP3E are qualified J (i.e., estimated).

2.3.2 Analytical Results

Organic constituents detected above method detection limits in CSA2 Annex soil samples are presented in Table 2-1. Only samples from Boring B43SB04 were analyzed for inorganic constituents. These results were previously reported in the Final Sampling Results and Data Evaluation Report for Miscellaneous Surplus OU Study Areas (Miscellaneous Study Areas DER) (QST, 1997a). The inorganic constituent concentrations detected are similar to site-specific background values.

Except for Sample AXTP3F, each sample contained detectable levels of at least one PAH constituent. Benzo(a)pyrene concentrations ranged from 0.003 milligrams per kilogram (mg/kg) to 9.3 mg/kg. The highest concentration was detected in Sample AXTP5E, the scrape from the east wall of Test Pit AXTP05. Twelve of the 18 detections of benzo(a)pyrene were at or above 1 mg/kg. The PAH constituent with the highest reported concentration is anthracene with 32 mg/kg, followed by acenaphthene at 25 mg/kg, phenanthrene at 16 mg/kg, pyrene and fluoranthene at 14 mg/kg, and naphthalene at 12 mg/kg. Each of these detections were reported for Sample B43SB04(0'). The detection of elevated levels of PAHs is not unexpected given the presence of coal in sidewalls of the test pits.

Table 2-1. Detection Summary or Organic Constituents in CSA Annex Soil (mg/kg), Surplus OU, Fort Sheridan, Illinois - Page 1 of 2

Parameter	Sample ID / Lab ID / Depth	AXTP1BE 21165-005 0-6'	AXTP1BE DUP 21165-006 0-6'	AXTP1BF 21165-004 6'	AXTP1BN 21165-003 0-6'	AXTP1BS 21165-002 0-6'	AXTP1BW 21165-001 0-6'	AXTP3E 21165-009 0-3.5'	AXTP3F 21165-010 0-3.5'	AXTP3N 21165-007 0-3.8'	AXTP3S 21165-011 0-3.8'	AXTP3W 21165-008 0-3.5'
1-Methylnaphthalene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene		1.5 J	7.5 J	<0.059	0.13	<0.12 UJ	<0.12 UJ	0.42 J	<0.058	0.5 J	0.11	0.15
Acenaphthylene		0.74 J	0.83 J	<0.059	<0.061	0.16 J	0.65 J	0.16 J	<0.058	0.19 J	0.11	0.12
Anthracene		2 J	0.75 J	<0.059	<0.061	0.25 J	0.65 J	0.16 J	<0.058	0.28 J	0.061	0.078
Benzo(a)Anthracene		2.9 J	1.8 J	0.064	0.35	1.2 J	2.9 J	0.88 J	<0.041	1.2 J	0.3	0.31
Benzo(a)Pyrene		7.7 J	4.6 J	<0.042	0.52	1.2 J	3.4 J	1 J	<0.041	1.5 J	0.51	0.49
Benzo(b)Fluoranthene		1.6 J	0.96 J	<0.042	0.29	0.84 J	2 J	1.2 J	<0.041	0.74 J	0.18	0.17
Benzo(g,h,i)Perylene		5 J	2.9 J	<0.059	0.29	0.86 J	2.4 J	0.81 J	<0.058	1 J	0.28	0.17
Benzo(k)Fluoranthene		1.1 J	0.84 J	<0.042	0.12	0.36 J	1.1 J	0.23 J	<0.041	0.42 J	0.1	<0.037
Chrysene		3.6 J	2.1 J	0.049	0.22	0.95 J	1.6 J	0.63 J	<0.041	0.69 J	0.18	0.19
Dibenzo(a,h)Anthracene		1.8 J	1.7 J	<0.059	0.14	0.43 J	<0.12 UJ	0.43 J	<0.058	0.6 J	<0.06	0.11
Fluoranthene		8.8 J	5.4 J	<0.059	0.36	1.6 J	4.5 J	1.1 J	<0.058	1.4 J	0.55	0.58
Fluorene		<0.12 UJ	<0.12 UJ	<0.059	<0.061	<0.12 UJ	<0.12 UJ	<0.11 UJ	<0.058	<0.12 UJ	<0.06	<0.059
Indeno(1,2,3-CD)Pyrene		2.6 J	1.6 J	<0.042	0.16	0.43 J	1.1 J	0.38 J	<0.041	0.5 J	0.18	0.18
Methylene Chloride		N/A	N/A J	N/A	N/A	N/A	N/A	N/A	N/A	N/A J	N/A	N/A
Naphthalene		5.4 J	3.4 J	<0.059	0.11	1 J	4 J	1.1 J	<0.058	1.1 J	0.3	0.29
Phenanthrene		5.8 J	2.3 J	<0.059	0.066	0.63 J	1.8 J	0.49 J	<0.058	0.88 J	0.18	0.24
Pyrene		0.34 J	4.1 J	<0.059	0.38	1.6 J	3.8 J	0.93 J	<0.058	1.2 J	0.21	0.26

n\data\proj\4902087\sp\CSA2Annex\PAH_HitsOnly.xls

Table 2-1. Detection Summary or Organic Constituents in CSA Annex Soil (mg/kg), Surplus OU, Fort Sheridan, Illinois - Page 2 of 2

Parameter	Sample ID Lab ID Depth	AXTP4E 21165-015 0-4.3'	AXTP4F 21165-016 0-4'	AXTP4N 21165-014 0-4'	AXTP4S 21165-012 0-3.6'	AXTP4S DUP 21165-013 0-3.6'	AXTP4W 21165-017 0-3.5'	AXTP5E 21165-022 0-0.6'	AXTP5N 21165-021 0-1.3'	B43SB04 NP2SB*69 0'	B43SB04 NP2SB*70 7.5'	B43SB04 NP2SB*71 12'
1-Methylnaphthalene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6	<0.133	<0.133
2-Methylnaphthalene		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25	<0.133	<0.133
Acenaphthene		0.89 J	<0.06	1.8 J	0.31	1.1 J	0.58	2.8 J	3.5 J	30	<0.133	<0.133
Acenaphthylene		0.69 J	<0.06	1.1 J	0.53	0.75 J	0.85	0.58 J	<0.24 UJ	3	<0.133	<0.133
Anthracene		0.5 J	<0.06	0.64 J	0.14	0.22 J	<0.059	3.7 J	2.6 J	32	<0.0067	<0.0067
Benzo(a)Anthracene		1.4 J	0.055	1.8 J	0.48	0.94 J	0.28	9.5 J	5.9 J	7	0.00329	<0.0013
Benzo(a)Pyrene		1.5 J	<0.042	2.5 J	0.73	1.1 J	0.57	9.3 J	8.8 J	7.6	0.003	<0.0007
Benzo(b)Fluoranthene		1.6 J	<0.042	2 J	0.31	0.94 J	0.18	8.2 J	5.3 J	8	0.00427	<0.0013
Benzo(g,h,i)Perylene		1.1 J	<0.06	1.7 J	0.5	0.86 J	0.31	4.3 J	5.2 J	4	<0.0067	<0.0067
Benzo(k)Fluoranthene		0.43 J	<0.042	0.52 J	<0.041	0.24 J	0.091	3 J	2.2 J	5	0.00201	<0.0007
Chrysene		0.69 J	0.044	0.98 J	0.27	0.46 J	0.16	6 J	3.9 J	8	<0.0067	<0.0067
Dibenzo(a,h)Anthracene		0.69 J	<0.06	1.1 J	<0.058	0.44 J	<0.059	2.4 J	2.6 J	1.8	<0.0033	<0.0033
Fluoranthene		2.6 J	<0.06	3.8 J	1	1.3 J	0.5	14 J	10 J	14	0.00555	<0.0013
Fluorene		<0.12 UJ	<0.06	<0.12 UJ	<0.058	<0.11 UJ	<0.059	0.48 J	<0.24 UJ	2.5	<0.033	<0.033
Indeno(1,2,3-CD)Pyrene		0.49 J	<0.042	0.77 J	0.27	0.42 J	0.2	2.6 J	2.8 J	4	<0.0033	<0.0033
Methylene Chloride		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	0.013
Naphthalene		1.9 J	<0.06	2.8 J	0.49	1.4 J	0.41	3.3 J	3.6 J	12	<0.133	<0.133
Phenanthrene		1.6 J	<0.06	1.9 J	0.33	0.75 J	0.2	7 J	3.3 J	16	<0.033	<0.033
Pyrene		1.1 J	<0.06	1.1 J	0.45	0.31 J	0.72	12 J	8 J	14	0.142	<0.0067

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N/A = Not applicable

mg/kg = milligrams per kilogram

J = Value is estimated (NFG Qualifier)

UJ = The analyte/compound is not detected above the reported sample quantitation limit. The reported quantitation limit is approximated and may not represent the actual limit necessary to accurately measure the compound in the sample (NFG Qualifier).

3.0 Risk-Based Screening Evaluation

The data obtained from soil Boring B43SB04 and the excavated test pits are used in this report to determine the potential risk associated with this study area, which is to be surplused. To achieve this determination, each datum was evaluated using the risk-based screening process outlined in the Final Revised Final Technical Evaluation Plan (TEP) (ESE, 1996). This section presents the results of this process.

3.1 Data Evaluation Baseline

Prior to actually performing the screening, the issue of duplicate samples was addressed. Duplicate samples were collected for quality control (QC) purposes. In those instances where a constituent was detected in both the primary and the duplicate samples, the concentrations were averaged. The average concentration was then carried through the risk-based screening. In those instances where a constituent was detected in one sample but not the other, the value represented by the detected concentration was used. This concentration was then carried through the risk-based screening. Samples that exceeded the risk-based screening values were incorporated into a relative-risk analysis identical to that used in the Miscellaneous Study Areas DER and Technical Memorandum (QST, 1997a and 1997b).

3.2 CSA Annex Study Area Risk-Based Screening

A total of 19 soil samples were utilized in the risk-based screening process. Duplicate samples were collected from two of the 19 samples. Each of the 19 samples were analyzed for PAHs and three of the 19 samples were analyzed for inorganic constituents. The results of the risk-based screening for the CSA Annex are presented in Table 3-1. Inorganic constituents were not evaluated in the risk-based screening as they have previously been determined to be at background levels (QST, 1997a and 1997b). In Table 3-1, the terms "fail" and "pass" are used to describe the results of the screening. The term "fail" indicates that the constituent concentration is above or exceeds the risk-based screening value. The term "pass" indicates that the constituent concentration is lower than or falls below the risk-based screening value.

PAH constituents exceed the risk-based screening values in 15 of the 19 samples collected. Benzo(a) pyrene is the most common PAH exceeding the risk-based screening value with 15 exceedences. Dibenzo(a,h)anthracene is the second most common PAH exceeding the risk-based screening value with 12 exceedences followed by 11 benzo(a)anthracene and benzo(b)fluoranthene exceedences.

Indeno(1,2,3-cd)pyrene exceeded the risk-based screening value with six exceedences. The screening criteria used are USEPA Region IX Preliminary Remediation Goals (PRGs).

3.3 Risk Evaluation

Results of the CSA Annex risk calculations are presented in Table 3-2. These results indicate that the RS_{ct} associated with the CSA Annex study area samples is 1E-04. The principle components of the RS_{ct} are benzo(a)pyrene with an RS_c of 6E-05 (60 percent of the RS_{ct}), benzo(a)anthracene with an RS_c of 2E-05 (20 percent of the RS_{ct}), and dibenzo(a)anthracene with an RS_c of 2E-05 (20 percent of the RS_{ct}). The RS_{ct} of 1E-04 for the CSA Annex is based on residential risk-based screening values, which, in accordance with the approved Fort Sheridan Concept Plan [Johnson, Johnson and Roy, Inc. (JJR), 1994], are appropriate for the future use of this study area.

Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 1 of 8

Site ID Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP1BE						
21165-005/006	Acenaphthene	4.5*	2.9e+03	TACO	Pass	TACO Table A - Class II
21165-005/006	Acenaphthylene	0.785*	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-005/006	Anthracene	1.375*	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-005/006	Benzo(a)Anthracene	2.35*	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-005/006	Benzo(a)Pyrene	6.15*	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-005/006	Benzo(b)Fluoranthene	1.28*	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-005/006	Benzo(g,h,i)Perylene	3.95*	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-005/006	Benzo(k)Fluoranthene	0.97*	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-005/006	Chrysene	2.85*	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-005/006	Dibenzo(a,h)Anthracene	1.75*	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-005/006	Fluoranthene	7.1*	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-005/006	Indeno(1,2,3-CD)Pyrene	2.1*	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-005/006	Naphthalene	4.4*	4.2e+02	TACO	Pass	TACO Table A - Class II
21165-005/006	Phenanthrene	4.05*	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-005/006	Pyrene	2.22*	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP1BF						
21165-004	Benzo(a)Anthracene	0.064	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-004	Chrysene	0.049	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP1BN						
21165-003	Acenaphthene	0.13	2.9e+03	TACO	Pass	TACO Table A - Class II
21165-003	Benzo(a)Anthracene	0.35	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-003	Benzo(a)Pyrene	0.52	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-003	Benzo(b)Fluoranthene	0.29	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-003	Benzo(g,h,i)Perylene	0.29	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-003	Benzo(k)Fluoranthene	0.12	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-003	Chrysene	0.22	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-003	Dibenzo(a,h)Anthracene	0.14	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-003	Fluoranthene	0.36	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-003	Indeno(1,2,3-CD)Pyrene	0.16	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-003	Naphthalene	0.11	4.2e+02	TACO	Pass	TACO Table A - Class II
21165-003	Phenanthrene	0.066	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-003	Pyrene	0.38	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 2 of 8

Site ID	Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP1BS							
	21165-002	Acenaphthylene	0.16	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-002	Anthracene	0.25	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-002	Benzo(a)Anthracene	1.2	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-002	Benzo(a)Pyrene	1.2	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-002	Benzo(b)Fluoranthene	0.84	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-002	Benzo(g,h,i)Perylene	0.86	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-002	Benzo(k)Fluoranthene	0.36	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-002	Chrysene	0.95	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-002	Dibenzo(a,h)Anthracene	0.43	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-002	Fluoranthene	1.6	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-002	Indeno(1,2,3-CD)Pyrene	0.43	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-002	Naphthalene	1	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-002	Phenanthrene	0.63	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-002	Pyrene	1.6	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP1BW							
	21165-001	Acenaphthylene	0.65	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-001	Anthracene	0.65	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-001	Benzo(a)Anthracene	2.9	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-001	Benzo(a)Pyrene	3.4	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-001	Benzo(b)Fluoranthene	2	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-001	Benzo(g,h,i)Perylene	2.4	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-001	Benzo(k)Fluoranthene	1.1	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-001	Chrysene	1.6	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-001	Fluoranthene	4.5	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-001	Indeno(1,2,3-CD)Pyrene	1.1	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-001	Naphthalene	4	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-001	Phenanthrene	1.8	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-001	Pyrene	3.8	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP3E							
	21165-009	Acenaphthene	0.42	2.9e+03	TACO	Pass	TACO Table A - Class II
	21165-009	Acenaphthylene	0.16	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-009	Anthracene	0.16	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 3 of 8

Site ID Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP3E						
21165-009	Benzo(a)Anthracene	0.88	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-009	Benzo(a)Pyrene	1	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-009	Benzo(b)Fluoranthene	1.2	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-009	Benzo(g,h,i)Perylene	0.81	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-009	Benzo(k)Fluoranthene	0.23	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-009	Chrysene	0.63	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-009	Dibenzo(a,h)Anthracene	0.43	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-009	Fluoranthene	1.1	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-009	Indeno(1,2,3-CD)Pyrene	0.38	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-009	Naphthalene	1.1	4.2e+02	TACO	Pass	TACO Table A - Class II
21165-009	Phenanthrene	0.49	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-009	Pyrene	0.93	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP3N						
21165-007	Acenaphthene	0.5	2.9e+03	TACO	Pass	TACO Table A - Class II
21165-007	Acenaphthylene	0.19	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-007	Anthracene	0.28	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-007	Benzo(a)Anthracene	1.2	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-007	Benzo(a)Pyrene	1.5	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-007	Benzo(b)Fluoranthene	0.74	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-007	Benzo(g,h,i)Perylene	1	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-007	Benzo(k)Fluoranthene	0.42	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-007	Chrysene	0.69	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-007	Dibenzo(a,h)Anthracene	0.6	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-007	Fluoranthene	1.4	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-007	Indeno(1,2,3-CD)Pyrene	0.5	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-007	Naphthalene	1.1	4.2e+02	TACO	Pass	TACO Table A - Class II
21165-007	Phenanthrene	0.88	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-007	Pyrene	1.2	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP3S						
21165-011	Acenaphthene	0.11	2.9e+03	TACO	Pass	TACO Table A - Class II
21165-011	Acenaphthylene	0.11	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-011	Anthracene	0.061	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 4 of 8

Site ID	Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP3S							
	21165-011	Benzo(a)Anthracene	0.3	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-011	Benzo(a)Pyrene	0.51	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-011	Benzo(b)Fluoranthene	0.18	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-011	Benzo(g,h,i)Perylene	0.28	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-011	Benzo(k)Fluoranthene	0.1	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-011	Chrysene	0.18	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-011	Fluoranthene	0.55	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-011	Indeno(1,2,3-CD)Pyrene	0.18	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-011	Naphthalene	0.3	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-011	Phenanthrene	0.18	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-011	Pyrene	0.21	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP3W							
	21165-008	Acenaphthene	0.15	2.9e+03	TACO	Pass	TACO Table A - Class II
	21165-008	Acenaphthylene	0.12	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-008	Anthracene	0.078	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-008	Benzo(a)Anthracene	0.31	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-008	Benzo(a)Pyrene	0.49	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-008	Benzo(b)Fluoranthene	0.17	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-008	Benzo(g,h,i)Perylene	0.17	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-008	Chrysene	0.19	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-008	Dibenzo(a,h)Anthracene	0.11	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-008	Fluoranthene	0.58	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-008	Indeno(1,2,3-CD)Pyrene	0.18	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-008	Naphthalene	0.29	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-008	Phenanthrene	0.24	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-008	Pyrene	0.26	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP4E							
	21165-015	Acenaphthene	0.89	2.9e+03	TACO	Pass	TACO Table A - Class II
	21165-015	Acenaphthylene	0.69	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-015	Anthracene	0.5	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-015	Benzo(a)Anthracene	1.4	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-015	Benzo(a)Pyrene	1.5	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 5 of 8

Site ID Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP4E						
21165-015	Benzo(b)Fluoranthene	1.6	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-015	Benzo(g,h,i)Perylene	1.1	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-015	Benzo(k)Fluoranthene	0.43	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-015	Chrysene	0.69	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-015	Dibenzo(a,h)Anthracene	0.69	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-015	Fluoranthene	2.6	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-015	Indeno(1,2,3-CD)Pyrene	0.49	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-015	Naphthalene	1.9	4.2e+02	TACO	Pass	TACO Table A - Class II
21165-015	Phenanthrene	1.6	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-015	Pyrene	1.1	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP4F						
21165-016	Benzo(a)Anthracene	0.055	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-016	Chrysene	0.044	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP4N						
21165-014	Acenaphthene	1.8	2.9e+03	TACO	Pass	TACO Table A - Class II
21165-014	Acenaphthylene	1.1	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-014	Anthracene	0.64	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-014	Benzo(a)Anthracene	1.8	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-014	Benzo(a)Pyrene	2.5	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-014	Benzo(b)Fluoranthene	2	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-014	Benzo(g,h,i)Perylene	1.7	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-014	Benzo(k)Fluoranthene	0.52	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-014	Chrysene	0.98	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-014	Dibenzo(a,h)Anthracene	1.1	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-014	Fluoranthene	3.8	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
21165-014	Indeno(1,2,3-CD)Pyrene	0.77	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
21165-014	Naphthalene	2.8	4.2e+02	TACO	Pass	TACO Table A - Class II
21165-014	Phenanthrene	1.9	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
21165-014	Pyrene	1.1	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP4S						
21165-012/013	Acenaphthene	0.705*	2.9e+03	TACO	Pass	TACO Table A - Class II

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 6 of 8

Site ID	Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP4S							
	21165-012/013	Acenaphthylene	0.64*	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-012/013	Anthracene	0.18*	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-012/013	Benzo(a)Anthracene	0.71*	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-012/013	Benzo(a)Pyrene	0.915*	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-012/013	Benzo(b)Fluoranthene	0.625*	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-012/013	Benzo(g,h,i)Perylene	0.68*	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-012/013	Benzo(k)Fluoranthene	0.13*	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-012/013	Chrysene	0.365*	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-012/013	Dibenzo(a,h)Anthracene	0.233*	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-012/013	Fluoranthene	1.15*	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-012/013	Indeno(1,2,3-CD)Pyrene	0.345*	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-012/013	Naphthalene	0.945*	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-012/013	Phenanthrene	0.54*	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-012/013	Pyrene	0.38*	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP4W							
	21165-017	Acenaphthene	0.58	2.9e+03	TACO	Pass	TACO Table A - Class II
	21165-017	Acenaphthylene	0.85	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-017	Benzo(a)Anthracene	0.28	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-017	Benzo(a)Pyrene	0.57	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-017	Benzo(b)Fluoranthene	0.18	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-017	Benzo(g,h,i)Perylene	0.31	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-017	Benzo(k)Fluoranthene	0.091	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-017	Chrysene	0.16	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-017	Fluoranthene	0.5	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-017	Indeno(1,2,3-CD)Pyrene	0.2	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-017	Naphthalene	0.41	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-017	Phenanthrene	0.2	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-017	Pyrene	0.72	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP5E							
	21165-022	Acenaphthene	2.8	2.9e+03	TACO	Pass	TACO Table A - Class II
	21165-022	Acenaphthylene	0.58	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-022	Anthracene	3.7	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 7 of 8

Site ID	Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
AXTP5E							
	21165-022	Benzo(a)Anthracene	9.5	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-022	Benzo(a)Pyrene	9.3	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-022	Benzo(b)Fluoranthene	8.2	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-022	Benzo(g,h,i)Perylene	4.3	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-022	Benzo(k)Fluoranthene	3	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-022	Chrysene	6	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-022	Dibenzo(a,h)Anthracene	2.4	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-022	Fluoranthene	14	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-022	Fluorene	0.48	2.5e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-022	Indeno(1,2,3-CD)Pyrene	2.6	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-022	Naphthalene	3.3	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-022	Phenanthrene	7	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-022	Pyrene	12	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
AXTP5N							
	21165-021	Acenaphthene	3.5	2.9e+03	TACO	Pass	TACO Table A - Class II
	21165-021	Anthracene	2.6	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-021	Benzo(a)Anthracene	5.9	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-021	Benzo(a)Pyrene	8.8	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-021	Benzo(b)Fluoranthene	5.3	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-021	Benzo(g,h,i)Perylene	5.2	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-021	Benzo(k)Fluoranthene	2.2	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-021	Chrysene	3.9	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-021	Dibenzo(a,h)Anthracene	2.6	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-021	Fluoranthene	10	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	21165-021	Indeno(1,2,3-CD)Pyrene	2.8	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
	21165-021	Naphthalene	3.6	4.2e+02	TACO	Pass	TACO Table A - Class II
	21165-021	Phenanthrene	3.3	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	21165-021	Pyrene	8	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
B43SB04							
	NP2SB*69	1-Methylnaphthalene	9.6	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
	NP2SB*69	2-Methylnaphthalene	25	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
	NP2SB*69	Acenaphthene	30	2.9e+03	TACO	Pass	TACO Table A - Class II

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Table 3-1. Results of CSA Annex Risk-Based Screening, Surplus OU, Fort Sheridan, Illinois - Page 8 of 8

Site ID Lab ID	Constituent	Concentration (mg/kg)	Screening Value (mg/kg)	Source of Screening Value	Pass Or Fail	Comments
B43SB04						
NP2SB*69	Acenaphthylene	3	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
NP2SB*69	Anthracene	32	1.9e+04	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*69	Benzo(a)anthracene	7	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
NP2SB*69	Benzo(a)pyrene	7.6	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
NP2SB*69	Benzo(b)fluoranthene	8	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
NP2SB*69	Benzo(g,h,i)perylene	4	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
NP2SB*69	Benzo(k)fluoranthene	5	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*69	Chrysene	8	6.1e+01	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*69	Dibenzo(a,h)anthracene	1.8	6.1e-02	PRG	Fail	EPA Region IX PRGs, 8/1/96
NP2SB*69	Fluoranthene	14	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*69	Fluorene	2.5	2.5e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*69	Indeno(1,2,3-cd)pyrene	4	6.1e-01	PRG	Fail	EPA Region IX PRGs, 8/1/96
NP2SB*69	Naphthalene	12	4.2e+02	TACO	Pass	TACO Table A - Class II
NP2SB*69	Phenanthrene	16	2.0e+03	PRG	Pass	PRGs for most toxic non-naphthalene PAH (pyrene)
NP2SB*69	Pyrene	14	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*70	Benzo(a)anthracene	0.00329	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*70	Benzo(a)pyrene	0.003	6.1e-02	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*70	Benzo(b)fluoranthene	0.00427	6.1e-01	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*70	Benzo(k)fluoranthene	0.00201	6.1e+00	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*70	Fluoranthene	0.00555	2.6e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*70	Pyrene	0.0142	2.0e+03	PRG	Pass	EPA Region IX PRGs, 8/1/96
NP2SB*71	Methylene chloride	0.013	2.0e-01	TACO	Pass	TACO Table A - Class II

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PRG = Preliminary Remediation Goal
SSL = Soil Screening Level
TACO = Tiered Approach for Soil Cleanup Objectives
mg/kg = Milligrams per kilogram
* = Value is averaged with duplicate

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Table 3-2. Carcinogenic Risks for the CSA Annex, Fort Sheridan, Illinois

Constituent	UCL or Maximum Concentration Detected* (mg/kg)	Carcinogenic Screening Value (mg/kg)	Individual Carcinogenic Risk
Benzo(a)anthracene	9.5	6.1e-01	2e-05
Benzo(a)pyrene	3.49**	6.1e-02	6e-05
Benzo(b)fluoranthene	8.2	6.1e-01	1e-05
Dibenzo(a,h)anthracene	0.951**	6.1e-02	2e-05
Indeno(1,2,3-cd)pyrene	4	6.1e-01	7e-06
Cumulative Risk			**1e-04**

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UCL = 95 percent Upper Confidence Limit of the mean concentration
mg/kg = Milligrams per kilogram
* = The lower of the UCL or maximum concentration is used.
** = Value listed is the UCL for the constituent

4.0 Conclusions and Recommendations

The RS_{ct} of 1E-04 for the CSA Annex study area is at the upper end of USEPA's target risk range. Although the use of generic, conservative risk-based screening values to calculate the risk likely results in an overestimation of the potential risks, the widespread presence of coal at the study area (about 4 feet thick in one test pit) and the consistently elevated levels of PAHs detected in the samples, indicates a strong potential for unacceptable risks to future residents. Coal was open-air stockpiled in the general area and was used to supply fuel for industrial heating purposes at Fort Sheridan. Therefore, a removal action is recommended for the CSA Annex study area.

5.0 References

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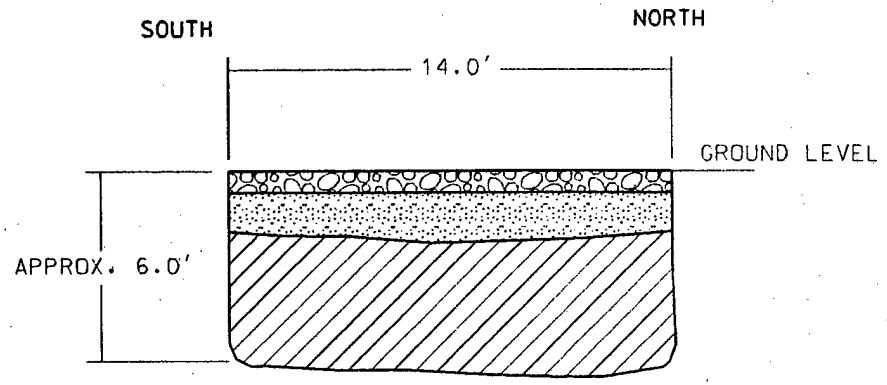
Appendix A

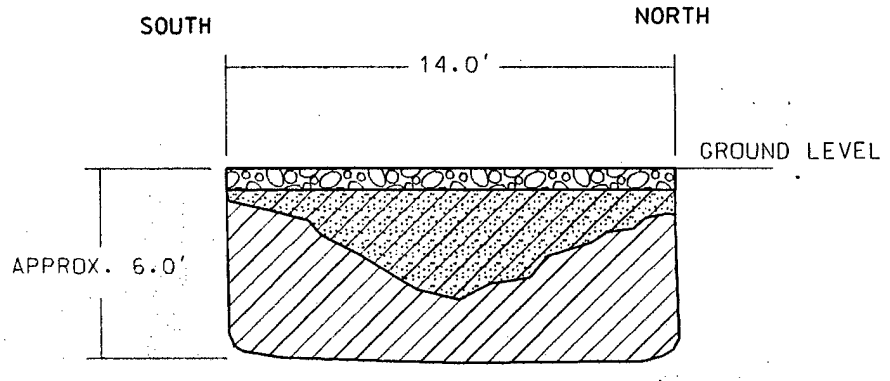
Test Pit Logs

FORT SHERIDAN

TEST PIT CSA2AX TP01B



WEST WALL



EAST WALL

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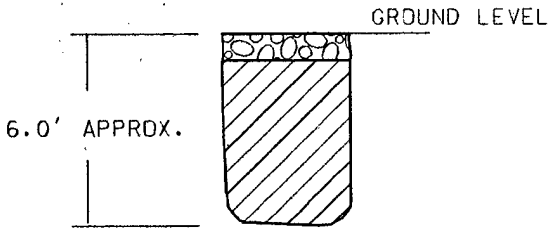
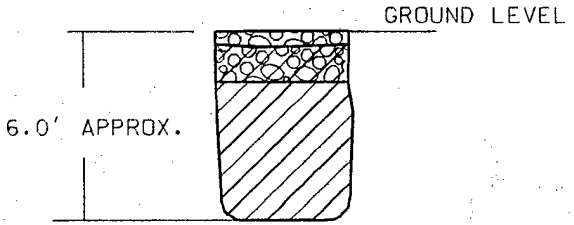
VERTICAL SCALE: 1" = 6'



NORTH WALL



SOUTH WALL

HORIZONTAL SCALE: 1" = 6'
VERTICAL SCALE: 1" = 6'

LEGEND

- COAL FILL/ MIXED WITH CLAY FILL
- GRAVEL FILL
- COAL/ CINDER FILL
- NATIVE/CLAY
- CLAY/ GRAVEL FILL

Date completed: 4/21/1999

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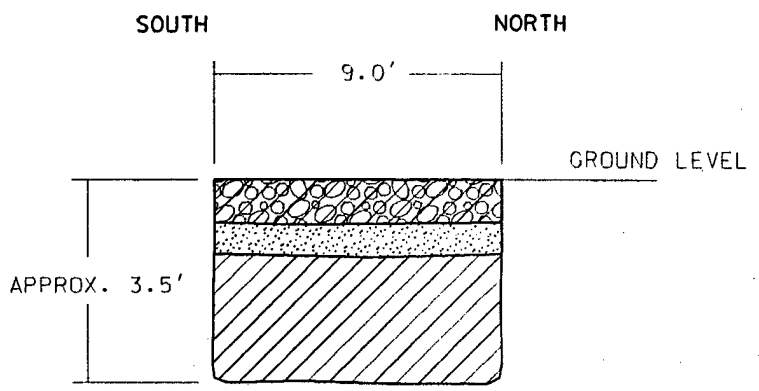
FORT SHERIDAN

TEST PIT CSA2AX TP03



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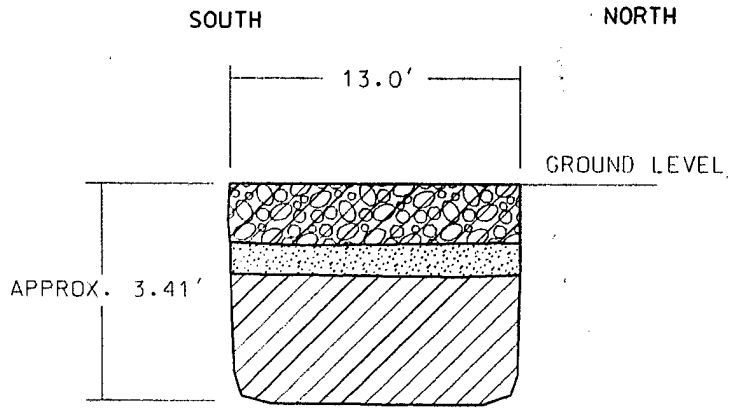

EAST WALL

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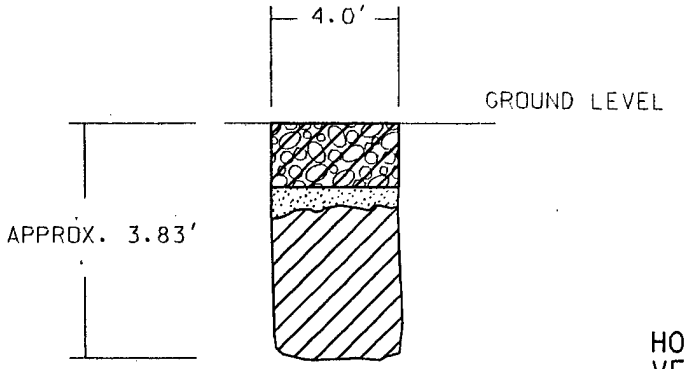
VERTICAL SCALE: 1" = 3'



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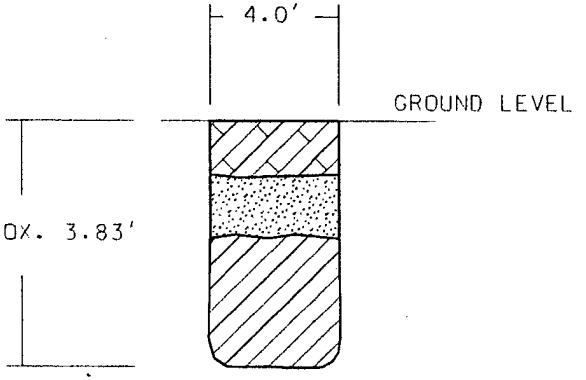

SOUTH WALL

HORIZONTAL SCALE: 1" = 6'
VERTICAL SCALE: 1" = 3'

LEGEND

- COAL/ CINDER FILL
- NATIVE/ CLAY
- CLAY/ GRAVEL FILL
- CLAY FILL

Date completed: 4/21/1999

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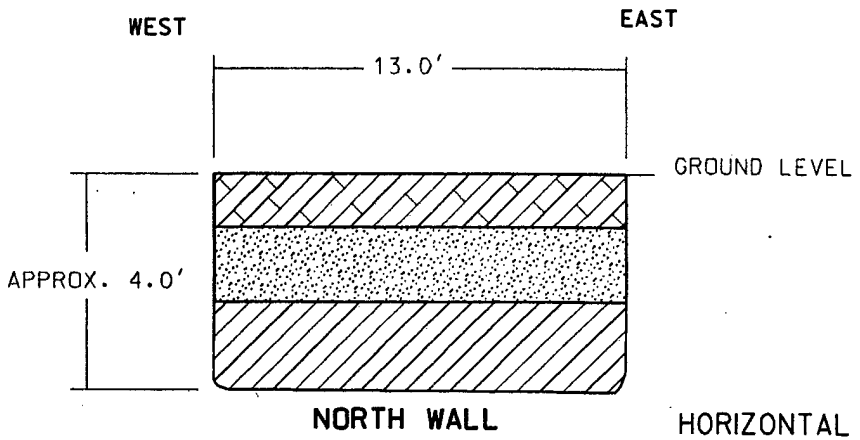
FORT SHERIDAN

TEST PIT CSA2AX TP04



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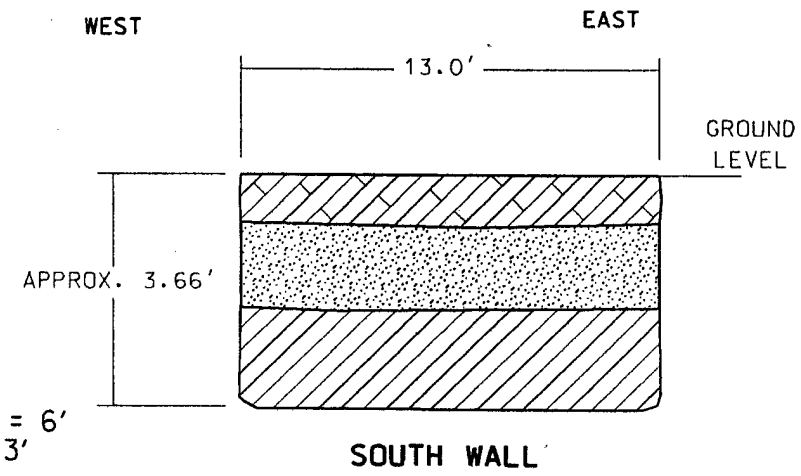

SOUTH WALL

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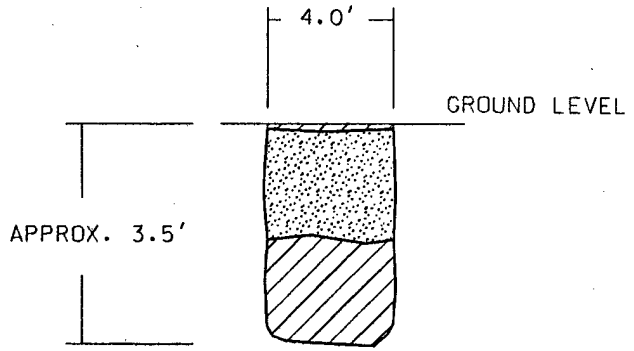
VERTICAL SCALE: 1" = 3'



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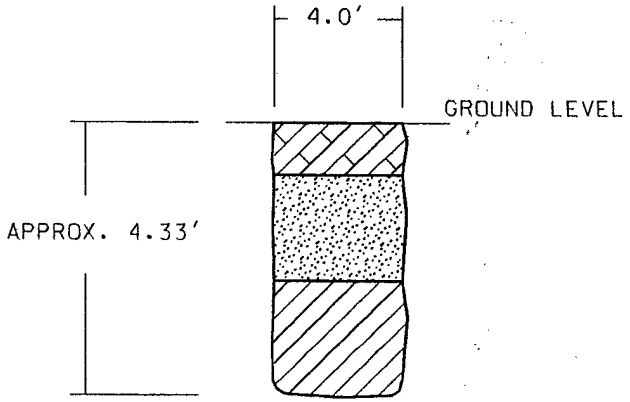

EAST WALL

HORIZONTAL SCALE: 1" = 6'
VERTICAL SCALE: 1" = 3'

LEGEND

COAL/ CINDER FILL

NATIVE/CLAY

GREY BROWN CLAY

Date completed: 4/21/1999

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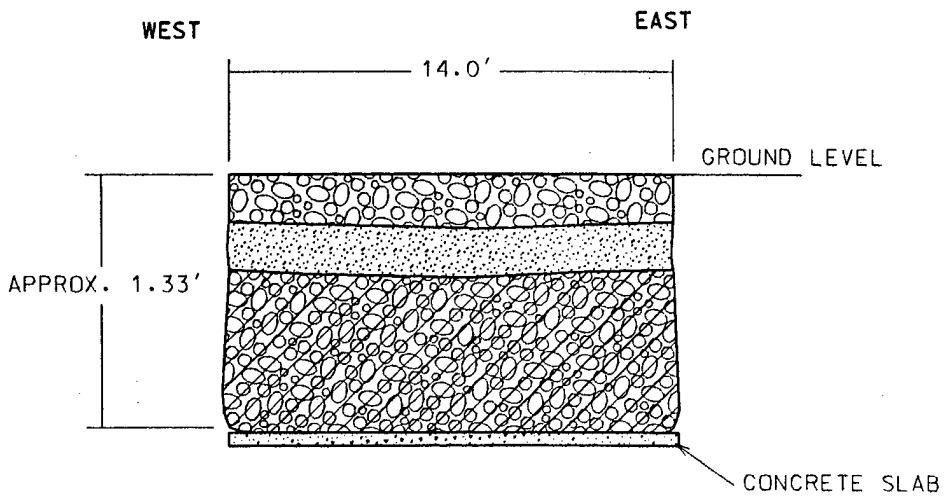
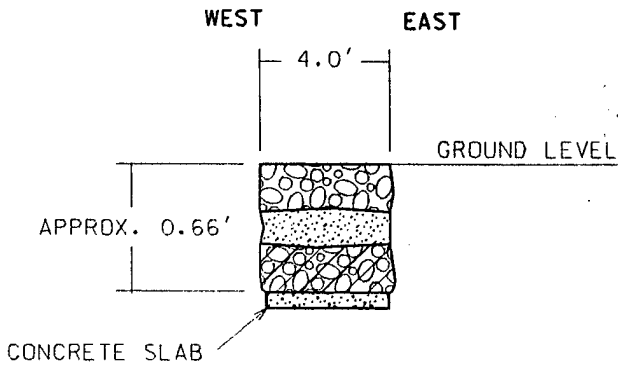
FORT SHERIDAN

TEST PIT CSA2AX TP05



NORTH WALL

HORIZONTAL SCALE: 1" = 6'
VERTICAL SCALE: 1" = 1'



EAST WALL

HORIZONTAL SCALE: 1" = 6'
VERTICAL SCALE: 1" = 1'

LEGEND

GRAVEL

COAL/
CINDER FILL

CLAY/
GRAVEL FILL

Date completed: 4/21/1999

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Appendix B

Analytical Data Sheets

Quanterra Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

QST
11665 Lilburne Park Road.
St. Louis, Mo. 63146

April 30, 1999

Attention: Ms. Debbie McKinley

Quanterra Project Number	: 833.02
SDG Number	: 21165
Date Received	: April 22, 1999
Number of Samples	: Twenty-two (22)
Sample type	: Soil

INTRODUCTION

Twenty-two (22) soil samples from QST were received at Quanterra Environmental Services, Earth City, MO for PAH analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

Reviewed and Approved

Ron Swaller
Quanterra Project Manager

The samples were labeled as follows:

CLIENT ID	LAB ID	MATRIX
AXTP1BW	21165-001	Soil
AXTP1BW	21165-001MS	Soil
AXTP1BW	21165-001MSD	Soil
AXTP1BS	21165-002	Soil
AXTP1BN	21165-003	Soil
AXTP1BF	21165-004	Soil
AXTP1BE	21165-005	Soil
AXTP1BE DUP	21165-006	Soil
AXTP3N	21165-007	Soil
AXTP3W	21165-008	Soil
AXTP3E	21165-009	Soil
AXTP3F	21165-010	Soil
AXTP3S	21165-011	Soil
AXTP4S	21165-012	Soil
AXTP4S DUP	21165-013	Soil
AXTP4N	21165-014	Soil
AXTP4E	21165-015	Soil
AXTP4F	21165-016	Soil
AXTP4W	21165-017	Soil
CSA3SDW2	21165-018	Soil
CSA3SDW1	21165-019	Soil
CSA3W3	21165-020	Soil
AXTP5N	21165-021	Soil
AXTP5E	21165-022	Soil

ANALYTICAL RESULTS/METHODOLOGY

The analytical results are presented by analytical test in the attached packages and summary reports. This report includes information on client identification numbers, lab identification numbers, preparation date, analysis date, results, units, and results for quality control samples.

The following table is a list of the analyses requested, and the methods used for the above samples:

Analysis	Method
PAH	EPA 8310
Percent Moisture	ITAS/SOP

QUALITY CONTROL

Method blanks, laboratory control samples, matrix spike, and matrix spike duplicate were analyzed for each parameter listed above.

NONCONFORMANCES

PAH

Batch QC (MS/MSD) was extracted on one set of samples and was not performed on QST's 2nd batch of samples. A LCS and blank was associated with both batches. Quanterra is providing QC (MS/MSD) data on an additional batch extracted on the same day and analyzed under the same calibration per the clients request. A PAH addendum data package was provided.

COMMENTS

PAH

The MS/MSD was out of control limits due to a dilution being made because of hits in the sample.

Receipt

The samples were received at 5°C. Sample CSA3SDW3 on chain of custody read as CSA3W3 on the sample lid an was logged in as such.

QUALIFIERS

*	= Values reported outside the QC limits.
B	= Value greater than IDL but less than CRDL (Metals only)
B	= Analyte found in the blank (Organics only)
CRDL	= Customer Required Detection Limit
DL	= PQL
D	= Diluted
E	= Exceeds calibration
IDL	= Instrument detection limit
J	= Estimated Value (Organics only)
MDA	= Minimal detectable activity
MG/L	= Milligrams per liter
MG/KG	= Milligrams per kilogram
NA	= Not applicable
NC	= No criteria at this time

QUALIFIERS-continued

ND	= Non - detect
PCI/L	= Picocuries per liter
PCI/G	= Picocuries per gram
U	= Non - Detect
UG/L	= Micrograms per liter
UG/G	= Micrograms per gram
UG/KG	= Micrograms per kilogram
RPD	= Relative Percent Difference
%REC	= Percent Recovery
QCBLK	= Method Blank
QCLCS	= Laboratory Control Sample

Quanterra

Quanterra
April 30, 1999 09:57 am
Percent Solids

QST Environmental
11655 Lilburne Prk Road

St. Louis, MO 63146

Project Number: 833.02

Category: Percent Solids

Method : SL 4005

Sample Date : 21-APR-99
Received Date: 22-APR-99
Report Date : 30-APR-99

Client ID	Login No	Matrix	Decant Type	Prep Date	Percent Solids	Percent Moisture
AXTP1BW	21165-001	Soil	N	23-APR-99	82.76	17.24
AXTP1BS	21165-002	Soil	N	23-APR-99	84.85	15.15
AXTP1BN	21165-003	Soil	N	23-APR-99	80.78	19.22
AXTP1BF	21165-004	Soil	N	23-APR-99	83.41	16.59
AXTP1BE	21165-005	Soil	N	23-APR-99	80.17	19.83
AXTP1BE DUP	21165-006	Soil	N	23-APR-99	82.16	17.84
AXTP3N	21165-007	Soil	N	23-APR-99	84.42	15.58
AXTP3W	21165-008	Soil	N	23-APR-99	84.25	15.75
AXTP3E	21165-009	Soil	N	23-APR-99	86.75	13.25
AXTP3F	21165-010	Soil	N	23-APR-99	85.22	14.78
AXTP3S	21165-011	Soil	N	23-APR-99	82.36	17.64
AXTP4S	21165-012	Soil	N	23-APR-99	85.92	14.08
AXTP4S DUP	21165-013	Soil	N	23-APR-99	86.54	13.46
AXTP4N	21165-014	Soil	N	23-APR-99	85.86	14.14
AXTP4E	21165-015	Soil	N	23-APR-99	85.53	14.47
AXTP4F	21165-016	Soil	N	23-APR-99	83.48	16.52
AXTP4W	21165-017	Soil	N	23-APR-99	84.94	15.06
CSA3SDW2	21165-018	Soil	N	23-APR-99	94.19	5.81
CSA3SDW1	21165-019	Soil	N	23-APR-99	89.29	10.71
CSA3W3	21165-020	Soil	N	23-APR-99	87.77	12.23

Quanterra
April 30, 1999 09:57 am
Percent Solids

QST Environmental
11655 Lilburne Prk Road

St. Louis, MO 63146

Project Number: 833.02

Category: Percent Solids

Method : SL 4005

Sample Date : 21-APR-99
Received Date: 22-APR-99
Report Date : 30-APR-99

Client ID	Login No	Matrix	Decant Type	Prep Date	Percent Solids	Percent Moisture
AXTP5N	21165-021	Soil	N	23-APR-99	84.31	15.69
AXTP5E	21165-022	Soil	N	23-APR-99	85.75	14.25

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP1BW

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	4000	UG/KG		120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	650	UG/KG		120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG		120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	650	UG/KG		120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	4500	UG/KG		120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	3800	UG/KG		120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	2900	UG/KG		84	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		84	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	2000	UG/KG		84	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		84	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	3400	UG/KG		84	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	2400	UG/KG		120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		84	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	467	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP1BW

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	-835	%REC	*		10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	-162	%REC	*		10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	185	%REC	*		10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	0	%REC	*		10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	-310	%REC	*		10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	-92	%REC	*		10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	-825	%REC	*		10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	-675	%REC	*		10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	-450	%REC	*		10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	-200	%REC	*		10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	-300	%REC	*		10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	-175	%REC	*		10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	-550	%REC	*		10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	275	%REC	*		10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	-385	%REC	*		10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	-172	%REC	*		10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	119	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP1BW

Quanterra ID : 21165-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	-25	%REC	*		10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	138	%REC	*		10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1675	%REC	*		10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	118	%REC	*		10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	200	%REC	*		10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	88	%REC			10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	275	%REC	*		10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	-125	%REC	*		10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	125	%REC			10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	250	%REC	*		10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	0	%REC	*		10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	75	%REC			10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	425	%REC	*		10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	250	%REC	*		10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	250	%REC	*		10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	150	%REC	*		10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	338	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP1BS

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1000	UG/KG		120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	160	UG/KG		120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	630	UG/KG		120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	250	UG/KG		120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG		82	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	950	UG/KG		82	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	840	UG/KG		82	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	360	UG/KG		82	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG		82	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG		120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	860	UG/KG		120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG		82	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	189	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP1BN

Quanterra ID : 21165-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/23/99	110	UG/KG		61	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/23/99	61	UG/KG	U	61	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/23/99	130	UG/KG		61	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/23/99	61	UG/KG	U	61	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/23/99	66	UG/KG		61	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/23/99	61	UG/KG	U	61	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/23/99	360	UG/KG		61	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/23/99	380	UG/KG		61	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/23/99	350	UG/KG		43	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/23/99	220	UG/KG		43	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/23/99	290	UG/KG		43	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/23/99	120	UG/KG		43	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/23/99	520	UG/KG		43	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/23/99	140	UG/KG		61	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/23/99	290	UG/KG		61	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/23/99	160	UG/KG		43	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/23/99	60	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP1BF

Quanterra ID : 21165-004

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/23/99	64	UG/KG		42	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/23/99	49	UG/KG		42	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/23/99	42	UG/KG	U	42	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/23/99	42	UG/KG	U	42	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/23/99	42	UG/KG	U	42	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/23/99	59	UG/KG	U	59	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/23/99	42	UG/KG	U	42	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/23/99	44	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP1BE

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-005

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	5400	UG/KG		120	20
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	740	UG/KG		120	20
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1500	UG/KG		120	20
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	20
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	5800	UG/KG		120	20
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	2000	UG/KG		120	20
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	8800	UG/KG		120	20
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	340	UG/KG		120	20
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	2900	UG/KG		87	20
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	3600	UG/KG		87	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		87	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		87	20
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	7700	UG/KG		87	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG		120	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	5000	UG/KG		120	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	2600	UG/KG		87	20
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	874	%REC	D		20

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP1BE DUP

Quanterra ID : 21165-006

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	3400	UG/KG		120	20
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	830	UG/KG		120	20
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	7500	UG/KG		120	20
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	20
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	2300	UG/KG		120	20
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	750	UG/KG		120	20
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	5400	UG/KG		120	20
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	4100	UG/KG		120	20
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG		85	20
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	2100	UG/KG		85	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	960	UG/KG		85	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	840	UG/KG		85	20
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	4600	UG/KG		85	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	1700	UG/KG		120	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	2900	UG/KG		120	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		85	20
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	495	%REC	D		20

Quanterra

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11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP3N

Quanterra ID : 21165-007

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	190	UG/KG		120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	500	UG/KG		120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	880	UG/KG		120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	280	UG/KG		120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1400	UG/KG		120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG		120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG		82	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG		82	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	740	UG/KG		82	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	420	UG/KG		82	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1500	UG/KG		82	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	600	UG/KG		120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	1000	UG/KG		120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	500	UG/KG		82	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	212	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP3W

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-008

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/24/99	290	UG/KG		59	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/24/99	120	UG/KG		59	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/24/99	150	UG/KG		59	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/24/99	59	UG/KG	U	59	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/24/99	240	UG/KG		59	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/24/99	78	UG/KG		59	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/24/99	580	UG/KG		59	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/24/99	260	UG/KG		59	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/24/99	310	UG/KG		37	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/24/99	190	UG/KG		37	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/24/99	170	UG/KG		37	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/24/99	37	UG/KG	U	37	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/24/99	490	UG/KG		37	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/24/99	110	UG/KG		59	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/24/99	170	UG/KG		59	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/24/99	180	UG/KG		37	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/24/99	86	%REC			1

Quanterra

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11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP3E

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-009

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		110	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	160	UG/KG		110	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	420	UG/KG		110	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	110	UG/KG	U	110	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	490	UG/KG		110	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	160	UG/KG		110	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		110	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	930	UG/KG		110	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	880	UG/KG		80	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	630	UG/KG		80	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG		80	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	230	UG/KG		80	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1000	UG/KG		80	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG		110	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	810	UG/KG		110	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	380	UG/KG		80	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	156	%REC	D		10

Quanterra

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11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP3F

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-010

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/24/99	75	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP3S

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-011

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/24/99	300	UG/KG		60	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/24/99	110	UG/KG		60	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/24/99	110	UG/KG		60	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/24/99	180	UG/KG		60	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/24/99	61	UG/KG		60	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/24/99	550	UG/KG		60	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/24/99	210	UG/KG		60	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/24/99	300	UG/KG		42	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/24/99	180	UG/KG		42	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/24/99	180	UG/KG		42	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/24/99	100	UG/KG		42	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/24/99	510	UG/KG		42	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/24/99	280	UG/KG		60	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/24/99	180	UG/KG		42	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/24/99	101	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP4S

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-012

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/24/99	490	UG/KG		58	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/24/99	530	UG/KG		58	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/24/99	310	UG/KG		58	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/24/99	330	UG/KG		58	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/24/99	140	UG/KG		58	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/24/99	1000	UG/KG		58	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/24/99	450	UG/KG		58	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/24/99	480	UG/KG		41	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/24/99	270	UG/KG		41	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/24/99	310	UG/KG		41	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/24/99	41	UG/KG	U	41	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/24/99	730	UG/KG		41	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/24/99	58	UG/KG	U	58	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/24/99	500	UG/KG		58	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/24/99	270	UG/KG		41	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/24/99	40	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP4S DUP

Quanterra ID : 21165-013

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1400	UG/KG		110	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	750	UG/KG		110	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		110	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	110	UG/KG	U	110	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	750	UG/KG		110	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	220	UG/KG		110	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1300	UG/KG		110	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	310	UG/KG		110	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	940	UG/KG		80	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	460	UG/KG		80	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	940	UG/KG		80	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	240	UG/KG		80	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		80	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	440	UG/KG		110	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	860	UG/KG		110	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	420	UG/KG		80	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	189	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP4N

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-014

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	2800	UG/KG		120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG		120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	1900	UG/KG		120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	640	UG/KG		120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	3800	UG/KG		120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG		81	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	980	UG/KG		81	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	2000	UG/KG		81	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	520	UG/KG		81	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	2500	UG/KG		81	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	1700	UG/KG		120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	770	UG/KG		81	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	438	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP4E

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-015

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1900	UG/KG		120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG		120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	890	UG/KG		120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	500	UG/KG		120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	2600	UG/KG		120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1400	UG/KG		81	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG		81	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG		81	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG		81	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1500	UG/KG		81	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG		120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG		120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	490	UG/KG		81	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	283	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP4F

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-016

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/24/99	55	UG/KG		42	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/24/99	44	UG/KG		42	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/24/99	42	UG/KG	U	42	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/24/99	42	UG/KG	U	42	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/24/99	42	UG/KG	U	42	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/24/99	60	UG/KG	U	60	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/24/99	42	UG/KG	U	42	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/24/99	53	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP4W

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-017

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/24/99	410	UG/KG		59	1
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/24/99	850	UG/KG		59	1
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/24/99	580	UG/KG		59	1
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/24/99	59	UG/KG	U	59	1
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/24/99	200	UG/KG		59	1
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/24/99	59	UG/KG	U	59	1
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/24/99	500	UG/KG		59	1
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/24/99	720	UG/KG		59	1
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/24/99	280	UG/KG		41	1
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/24/99	160	UG/KG		41	1
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/24/99	180	UG/KG		41	1
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/24/99	91	UG/KG		41	1
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/24/99	570	UG/KG		41	1
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/24/99	59	UG/KG	U	59	1
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/24/99	310	UG/KG		59	1
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/24/99	200	UG/KG		41	1
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/24/99	81	%REC			1

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP5N

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-021

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198053-1	04/23/99	04/26/99	3600	UG/KG		240	20
Acenaphthylene	208-96-8	QCBLK198053-1	04/23/99	04/26/99	240	UG/KG	U	240	20
Acenaphthene	83-32-9	QCBLK198053-1	04/23/99	04/26/99	3500	UG/KG		240	20
Fluorene	86-73-7	QCBLK198053-1	04/23/99	04/26/99	240	UG/KG	U	240	20
Phenanthrene	85-01-8	QCBLK198053-1	04/23/99	04/26/99	3300	UG/KG		240	20
Anthracene	120-12-7	QCBLK198053-1	04/23/99	04/26/99	2600	UG/KG		240	20
Fluoranthene	206-44-0	QCBLK198053-1	04/23/99	04/26/99	10000	UG/KG		240	20
Pyrene	129-00-0	QCBLK198053-1	04/23/99	04/26/99	8000	UG/KG		240	20
Benzo(a)Anthracene	56-55-3	QCBLK198053-1	04/23/99	04/26/99	5900	UG/KG		160	20
Chrysene	218-01-9	QCBLK198053-1	04/23/99	04/26/99	3900	UG/KG		160	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198053-1	04/23/99	04/26/99	5300	UG/KG		160	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198053-1	04/23/99	04/26/99	2200	UG/KG		160	20
Benzo(a)Pyrene	50-32-8	QCBLK198053-1	04/23/99	04/26/99	8800	UG/KG		160	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198053-1	04/23/99	04/26/99	2600	UG/KG		240	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198053-1	04/23/99	04/26/99	5200	UG/KG		240	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198053-1	04/23/99	04/26/99	2800	UG/KG		160	20
Terphenyl-d14	1718-51-0	QCBLK198053-1	04/23/99	04/26/99	712	%REC	D		20

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-022

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP5E

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198053-1	04/23/99	04/26/99	3300	UG/KG		230	20
Acenaphthylene	208-96-8	QCBLK198053-1	04/23/99	04/26/99	580	UG/KG		230	20
Acenaphthene	83-32-9	QCBLK198053-1	04/23/99	04/26/99	2800	UG/KG		230	20
Fluorene	86-73-7	QCBLK198053-1	04/23/99	04/26/99	480	UG/KG		230	20
Phenanthrene	85-01-8	QCBLK198053-1	04/23/99	04/26/99	7000	UG/KG		230	20
Anthracene	120-12-7	QCBLK198053-1	04/23/99	04/26/99	3700	UG/KG		230	20
Fluoranthene	206-44-0	QCBLK198053-1	04/23/99	04/26/99	14000	UG/KG		230	20
Pyrene	129-00-0	QCBLK198053-1	04/23/99	04/26/99	12000	UG/KG		230	20
Benzo(a)Anthracene	56-55-3	QCBLK198053-1	04/23/99	04/26/99	9500	UG/KG		160	20
Chrysene	218-01-9	QCBLK198053-1	04/23/99	04/26/99	6000	UG/KG		160	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198053-1	04/23/99	04/26/99	8200	UG/KG		160	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198053-1	04/23/99	04/26/99	3000	UG/KG		160	20
Benzo(a)Pyrene	50-32-8	QCBLK198053-1	04/23/99	04/26/99	9300	UG/KG		160	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198053-1	04/23/99	04/26/99	2400	UG/KG		230	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198053-1	04/23/99	04/26/99	4300	UG/KG		230	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198053-1	04/23/99	04/26/99	2600	UG/KG		160	20
Terphenyl-d14	1718-51-0	QCBLK198053-1	04/23/99	04/26/99	1185	%REC	D		20

Appendix C

Data Validation

Data Validation for Coal Storage Annex Data Surplus Operable Unit Fort Sheridan, Illinois

Prepared for:
U.S. Army Environmental Center
Base Closure Division
Aberdeen Proving Ground, Maryland 21010-5901

Prepared by:
QST Environmental Inc.
St. Louis, Missouri

June 28, 1999

QST Project No. 490-2087-0300

QST ENVIRONMENTAL

Table of Contents

1.0 Introduction

Twenty-two soil samples from the Coal Storage Area (CSA) Annex and the CSA3 sand sampling were prepared and analyzed by Quanterra Inc. (Quanterra) of Earth City, Missouri. The samples were collected on April 21, 1999. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs) by U.S. Environmental Protection Agency (USEPA) SW-846 Method 8310. The data package received from Quanterra for the soil samples contained a Quality Control Report, but additional quality assurance/quality control information necessary to complete the data review was requested and received from Quanterra under separate cover.

This report presents the results of the analytical level III and level IV data review performed on the 22 soil samples in accordance with the National Functional Guidelines (NFG) for Organic and Inorganic Data Review (USEPA, 1994). The analytical level IV data review was conducted by randomly selecting five samples (or 23 percent) from the 22 samples. The five selected samples were:

Client ID	Lab ID
AXTP1BS	21165-002
AXTP3E	21165-009
AXTP3S	21165-011
AXTP4F	21165-016
CSA3SDW1	21165-019

The analytical sample data were evaluated using the information obtained regarding the following parameters: chain of custody, sample condition receipt report, extraction holding times, analysis holding times, instrument performance check, initial calibration, continuing calibration, blanks, system monitoring compounds (surrogates), matrix spikes/matrix spike duplicates, laboratory control samples, and internal standards (see attached Data Review Checklist). This data validation report discusses areas of concern and any overall issues that affect data quality. Data sample results affected are qualified as necessary in accordance with the NFG.

2.0 Data Validation and Results

Sample chain of custodies were completed and signed by appropriate parties. Sample arrival at laboratory noted no exceptions in sample arrival conditions. All samples were extracted and analyzed within method holding times. The set of 22 samples was analyzed in two batches (198052 and 198053). The batches contained the samples as listed below.

Batch 198052				Batch 198053	
Sample ID	Laboratory ID	Sample ID	Laboratory ID	Sample ID	Laboratory ID
AXTP1BW	21165-001	AXTP3E	21165-009	CSA3SDW1	21165-019
AXTP1BW MS	21165-MS	AXTP3F	21165-010	CSA3W3	21165-020
AXTP1BW MSD	21165-MSD	AXTP3S	21165-011	AXTP5N	21165-021
AXTP1BS	21165-002	AXTP4S	21165-012	AXTP5E	21165-022
AXTP1BN	21165-003	AXTP4S	21165-013		
AXTP1BF	21165-004	DUPAXTP4N	21165-014		
AXTP1BE	21165-005	AXTP4E	21165-015		
AXTP1BE DUP	21165-006	AXTP4F	21165-016		
AXTP3N	21165-007	AXTP4W	21165-017		
AXTP3W	21165-008	AXTP5N	21165-018		

2.1 Validation of Batch 198052

The method blank was non-detect for all analytes. The laboratory control sample for this batch had all analytes within the QC recovery acceptance limits for the method. Both method blank and laboratory control samples had system monitoring compounds (surrogates) that were within the method QC recovery acceptance criterion (26-106%).

A minor issue on the review of the sample batch was the associated matrix spike (MS) and matrix spike duplicate (MSD) results. The 16 MS sample analytes were not within the QC percent recovery limits as set by the method. The MSD sample was not within the QC recovery limits for 13 of the 16 analytes. The MS/MSD had 2 analytes (chrysene and acenaphthene) that were not within the relative percent differences (RPD) criterion of 25%. No data qualification was made based on the MS/MSD data alone.

The two continuing calibrations for this batch had percent differences that were greater than 15% between the initial and continuing calibration responses for acenaphthene (29.5%, 28.1%) and anthracene (18.8%, 16.8%). Thus, all associated positive detects for acenaphthene and anthracene have been qualified as estimated "J" for the associated samples. The associated samples are 21165-001, 21165-

001MS, 21165-001MSD, 21165-002, 21165-005, 21165-006, 21165-007, 21165-009, 21165-013, 21165-014, 31165-015, 21165-021, and 21165-022.

In addition, samples 21165-001, 21165-001MS, 21165-001MSD, 21165-002, 21165-005, 21165-006, 21165-007, 21165-009, 21165-013, 21165-014, 31165-015, 21165-021, and 21165-022 were found to have system monitoring compounds (surrogates) that were not within the QC acceptance criterion of 26-106%. There were little or no recoveries for these samples because the recoveries were diluted out. In this case, the associated positive sample results and detection limits/non-detects have been qualified as estimated, "J" or "UJ", respectively.

2.2 Validation of Batch 198053

The method blank was non-detects for all analytes. The laboratory control sample for this batch had all analytes within the QC recovery acceptance limits for the method. Both method blank and laboratory control samples had system monitoring compounds (surrogates) that were within the method QC recovery acceptance criterion (26-106%).

The matrix spike (MS) and matrix spike duplicate (MSD) results for this batch were within the QC percent recovery limits as set by the method. The MSD sample was also within the QC recovery limits for the 16 analytes. The MS/MSD had relative percent differences (RPD) that were within the QC acceptance criterion of 25%.

The continuing calibrations for this batch had percent differences that were within 15% between the initial and continuing calibration responses.

The system monitoring compounds (surrogates) for the samples in this batch were within the QC acceptance criterion of 26-106%.

QC in this batch met the required specifications so no action was taken and no samples associated with this batch were qualified.

3.0 Summary and Conclusions

The result of the validation of the 22 soil samples resulted in several of the samples being qualified (see attached data sheets). The qualifiers that were placed on the data were "J" and "UJ". Qualifier "J" means that the associated numerical value is the approximate concentration of the analyte in the sample. Qualifier "UJ" means that the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Data Review Checklist

The data requirements to be checked are listed below:

_____ Holding Times

_____ Initial Calibration

_____ Continuing Calibration

_____ Blanks

_____ System Monitoring Compounds

_____ Matrix Spikes/Matrix Spike Duplicates

_____ Laboratory Control Samples

_____ Internal Standards

The specific Criteria, Evaluation, and Action for each requirement listed is per the National Functional Guidelines.

Appendix A

Qualified Data Sheets

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP1BW

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	4000	UG/KG	J	120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	650	UG/KG	J	120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG	J	120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	650	UG/KG	J	120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	4500	UG/KG	J	120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	3800	UG/KG	J	120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	2900	UG/KG	J	84	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	84	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	2000	UG/KG	J	84	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	84	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	3400	UG/KG	J	84	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	2400	UG/KG	J	120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	84	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	467	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP1BS

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1000	UG/KG	J	120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	160	UG/KG	J	120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	630	UG/KG	J	120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	250	UG/KG	J	120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG	J	82	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	950	UG/KG	J	82	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	840	UG/KG	J	82	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	360	UG/KG	J	82	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG	J	82	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG	J	120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	860	UG/KG	J	120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG	J	82	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	189	%REC	D		10

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP1BE

Quanterra ID : 21165-005

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	5400	UG/KG	J	120	20
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	740	UG/KG	J	120	20
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1500	UG/KG	J	120	20
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U J	120	20
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	5800	UG/KG	J	120	20
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	2000	UG/KG	J	120	20
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	8800	UG/KG	J	120	20
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	340	UG/KG	J	120	20
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	2900	UG/KG	J	87	20
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	3600	UG/KG	J	87	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	87	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	87	20
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	7700	UG/KG	J	87	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG	J	120	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	5000	UG/KG	J	120	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	2600	UG/KG	J	87	20
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	874	%REC	D		20

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St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP1BE DUP

Quanterra ID : 21165-006

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	3400	UG/KG	J	120	20
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	830	UG/KG	J	120	20
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	7500	UG/KG	J	120	20
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	20
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	2300	UG/KG	J	120	20
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	750	UG/KG	J	120	20
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	5400	UG/KG	J	120	20
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	4100	UG/KG	J	120	20
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG	J	85	20
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	2100	UG/KG	J	85	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	960	UG/KG	J	85	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	840	UG/KG	J	85	20
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	4600	UG/KG	J	85	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	1700	UG/KG	J	120	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	2900	UG/KG	J	120	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	85	20
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	495	%REC	D		20

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Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP3N

Quanterra ID : 21165-007

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	190	UG/KG	J	120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	500	UG/KG	J	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	880	UG/KG	J	120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	280	UG/KG	J	120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1400	UG/KG	J	120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG	J	120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG	J	82	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG	J	82	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	740	UG/KG	J	82	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	420	UG/KG	J	82	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1500	UG/KG	J	82	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	600	UG/KG	J	120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	1000	UG/KG	J	120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	500	UG/KG	J	82	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	212	%REC	D		10

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Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP3E

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-009

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	110	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	160	UG/KG	J	110	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	420	UG/KG	J	110	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	110	UG/KG	UJ	110	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	490	UG/KG	J	110	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	160	UG/KG	J	110	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	110	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	930	UG/KG	J	110	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	880	UG/KG	J	80	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	630	UG/KG	J	80	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	1200	UG/KG	J	80	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	230	UG/KG	J	80	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1000	UG/KG	J	80	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG	J	110	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	810	UG/KG	J	110	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	380	UG/KG	J	80	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	156	%REC	D		10

Quanterra

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Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP4S DUP

Quanterra ID : 21165-013

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1400	UG/KG	J	110	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	750	UG/KG	J	110	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	110	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	110	UG/KG	UJ	110	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	750	UG/KG	J	110	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	220	UG/KG	J	110	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	1300	UG/KG	J	110	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	310	UG/KG	J	110	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	940	UG/KG	J	80	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	460	UG/KG	J	80	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	940	UG/KG	J	80	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	240	UG/KG	J	80	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	80	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	440	UG/KG	J	110	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	860	UG/KG	J	110	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	420	UG/KG	J	80	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	189	%REC	D		10

Quanterra

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11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP4N

Quanterra ID : 21165-014

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	2800	UG/KG	U	120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	U	120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG	U	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	U,J	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	1900	UG/KG	U	120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	640	UG/KG	U	120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	3800	UG/KG	U	120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	U	120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1800	UG/KG	U	81	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	980	UG/KG	U	81	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	2000	UG/KG	U	81	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	520	UG/KG	U	81	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	2500	UG/KG	U	81	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	U	120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	1700	UG/KG	U	120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	770	UG/KG	U	81	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	438	%REC	D		10

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Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Client ID: AXTP4E

Quanterra ID : 21165-015

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198052-1	04/23/99	04/26/99	1900	UG/KG	J	120	10
Acenaphthylene	208-96-8	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG	J	120	10
Acenaphthene	83-32-9	QCBLK198052-1	04/23/99	04/26/99	890	UG/KG	J	120	10
Fluorene	86-73-7	QCBLK198052-1	04/23/99	04/26/99	120	UG/KG	UJ	120	10
Phenanthrene	85-01-8	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	120	10
Anthracene	120-12-7	QCBLK198052-1	04/23/99	04/26/99	500	UG/KG	J	120	10
Fluoranthene	206-44-0	QCBLK198052-1	04/23/99	04/26/99	2600	UG/KG	J	120	10
Pyrene	129-00-0	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	120	10
Benzo(a)Anthracene	56-55-3	QCBLK198052-1	04/23/99	04/26/99	1400	UG/KG	J	81	10
Chrysene	218-01-9	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG	J	81	10
Benzo(b)Fluoranthene	205-99-2	QCBLK198052-1	04/23/99	04/26/99	1600	UG/KG	J	81	10
Benzo(k)Fluoranthene	207-08-9	QCBLK198052-1	04/23/99	04/26/99	430	UG/KG	J	81	10
Benzo(a)Pyrene	50-32-8	QCBLK198052-1	04/23/99	04/26/99	1500	UG/KG	J	81	10
Dibenz(a,h)Anthracene	53-70-3	QCBLK198052-1	04/23/99	04/26/99	690	UG/KG	J	120	10
Benzo(g,h,i)Perylene	191-24-2	QCBLK198052-1	04/23/99	04/26/99	1100	UG/KG	J	120	10
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198052-1	04/23/99	04/26/99	490	UG/KG	J	81	10
Terphenyl-d14	1718-51-0	QCBLK198052-1	04/23/99	04/26/99	283	%REC	D		10

Quanterra

QST
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Project: 833.02

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP5N

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-021

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198053-1	04/23/99	04/26/99	3600	UG/KG	J	240	20
Acenaphthylene	208-96-8	QCBLK198053-1	04/23/99	04/26/99	240	UG/KG	U	240	20
Acenaphthene	83-32-9	QCBLK198053-1	04/23/99	04/26/99	3500	UG/KG	J	240	20
Fluorene	86-73-7	QCBLK198053-1	04/23/99	04/26/99	240	UG/KG	U	240	20
Phenanthrene	85-01-8	QCBLK198053-1	04/23/99	04/26/99	3300	UG/KG	J	240	20
Anthracene	120-12-7	QCBLK198053-1	04/23/99	04/26/99	2600	UG/KG	J	240	20
Fluoranthene	206-44-0	QCBLK198053-1	04/23/99	04/26/99	10000	UG/KG	J	240	20
Pyrene	129-00-0	QCBLK198053-1	04/23/99	04/26/99	8000	UG/KG	J	240	20
Benzo(a)Anthracene	56-55-3	QCBLK198053-1	04/23/99	04/26/99	5900	UG/KG	J	160	20
Chrysene	218-01-9	QCBLK198053-1	04/23/99	04/26/99	3900	UG/KG	J	160	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198053-1	04/23/99	04/26/99	5300	UG/KG	J	160	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198053-1	04/23/99	04/26/99	2200	UG/KG	J	160	20
Benzo(a)Pyrene	50-32-8	QCBLK198053-1	04/23/99	04/26/99	8800	UG/KG	J	160	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198053-1	04/23/99	04/26/99	2600	UG/KG	J	240	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198053-1	04/23/99	04/26/99	5200	UG/KG	J	240	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198053-1	04/23/99	04/26/99	2800	UG/KG	J	160	20
Terphenyl-d14	1718-51-0	QCBLK198053-1	04/23/99	04/26/99	712	%REC	D		20

Quanterra

QST
11655 Lilburne Prk Road
St. Louis, MO 63146

Project: 833.02

Sample Date : 04/21/99
Receipt Date : 04/22/99
Report Date : 04/30/99

Quanterra ID : 21165-022

Category: PAH
Method: EPA 8310
Matrix: Soil

Client ID: AXTP5E

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Naphthalene	91-20-3	QCBLK198053-1	04/23/99	04/26/99	3300	UG/KG	U	230	20
Acenaphthylene	208-96-8	QCBLK198053-1	04/23/99	04/26/99	580	UG/KG	U	230	20
Acenaphthene	83-32-9	QCBLK198053-1	04/23/99	04/26/99	2800	UG/KG	U	230	20
Fluorene	86-73-7	QCBLK198053-1	04/23/99	04/26/99	480	UG/KG	U	230	20
Phenanthrene	85-01-8	QCBLK198053-1	04/23/99	04/26/99	7000	UG/KG	U	230	20
Anthracene	120-12-7	QCBLK198053-1	04/23/99	04/26/99	3700	UG/KG	U	230	20
Fluoranthene	206-44-0	QCBLK198053-1	04/23/99	04/26/99	14000	UG/KG	U	230	20
Pyrene	129-00-0	QCBLK198053-1	04/23/99	04/26/99	12000	UG/KG	U	230	20
Benzo(a)Anthracene	56-55-3	QCBLK198053-1	04/23/99	04/26/99	9500	UG/KG	U	160	20
Chrysene	218-01-9	QCBLK198053-1	04/23/99	04/26/99	6000	UG/KG	U	160	20
Benzo(b)Fluoranthene	205-99-2	QCBLK198053-1	04/23/99	04/26/99	8200	UG/KG	U	160	20
Benzo(k)Fluoranthene	207-08-9	QCBLK198053-1	04/23/99	04/26/99	3000	UG/KG	U	160	20
Benzo(a)Pyrene	50-32-8	QCBLK198053-1	04/23/99	04/26/99	9300	UG/KG	U	160	20
Dibenz(a,h)Anthracene	53-70-3	QCBLK198053-1	04/23/99	04/26/99	2400	UG/KG	U	230	20
Benzo(g,h,i)Perylene	191-24-2	QCBLK198053-1	04/23/99	04/26/99	4300	UG/KG	U	230	20
Indeno(1,2,3-CD)Pyrene	193-39-5	QCBLK198053-1	04/23/99	04/26/99	2600	UG/KG	U	160	20
Terphenyl-d14	1718-51-0	QCBLK198053-1	04/23/99	04/26/99	1185	%REC	D		20